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# **FEDERAL MOTOR VEHICLE SAFETY STANDARDS AND REGULATIONS**

**With Amendments  
and Interpretations  
Issued through May 1976**

March 1977



**U.S. DEPARTMENT OF TRANSPORTATION  
National Highway Traffic Safety Administration  
Washington, D.C. 20590**



## FOREWORD

This reference volume contains Federal Motor Vehicle Safety Standards and Regulations, including amendments and interpretations, issued through May 1976.

The volume is divided into three sections. The first section contains procedural rules and regulations. The second section contains the standards. The third section contains Rulings and additional regulations.

Each section is sub-divided into Parts which correspond to the Part numbers appearing in the *United States Code of Federal Regulations*, as shown in the following examples:

*Part 551—Procedural Rules*

*Part 567—Certification*

*Part 571—Motor Vehicle Safety Standards*

*Part 575—Consumer Information*

The arrangement of the Parts within a section consists of preamble material, followed by the applicable standard or regulation. To simplify the incorporation of amended material into the text, amendments are issued as full replacement pages, with each page having the same page number as the page it replaces.

The page numbering system is designed to keep related materials together, while permitting expansion of the material within a section. Each page number identifies: the Part to which it belongs, the standard or regulation with which it is concerned, and the page number. For example, page one of Standard No. 108 is listed as PART 571; S 108-1. Preamble material (which is not amended) has the same numbering system, except that the abbreviation PRE precedes the page number (e.g. PART 571; S 108—PRE 1).

New standards, amendments, interpretations and other changes are issued bi-weekly as supplements to this document. These are loose leaf, pre-punched and distributed automatically to subscribers to this publication. A sample layout of a changed page with explanatory annotations appears on page iii.



Material enclosed in brackets represents amendments to original Standard

Effective date of Standard or amendment

## MOTOR VEHICLE SAFETY STANDARD NO. 203

### Impact Protection for the Driver from the Steering Control System—Passenger Cars

**S1. Purpose and scope.** This standard specifies requirements for steering control systems that will minimize chest, neck, and facial injuries to the driver as a result of impact.

**S2. Application.** [This standard applies to passenger cars. However it does not apply to vehicles that conform to the frontal barrier crash requirements (S5.1) of Standard No. 208 (§ 571.208) by means other than seat belt assemblies. (40 F.R. 17992—April 24, 1975. Effective: 5/27/75)]

**S3. Definitions.** "Steering control system" means the basic steering mechanism and its associated trim hardware, including any portion of a steering column assembly that provides energy absorption upon impact.

**S4. Requirements.**

**S4.1** Except as provided in S4.2, when the steering control system is impacted by a body block in accordance with Society of Automotive Engineers Recommended Practice J944, "Steering Wheel Assembly Laboratory Test Procedure," December 1965 or an approved equivalent,

at a relative velocity of 15 miles per hour, the impact force developed on the chest of the body block transmitted to the steering control system shall not exceed 2,500 pounds.

**S4.2** A Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed for the driver of any vehicle with forward control configuration that does not meet the requirements of S4.1.

**S4.3** The steering control system shall be so constructed that no components or attachments, including horn actuating mechanisms and trim hardware, can catch the driver's clothing or jewelry during normal driving maneuvers.

**[Interpretation**

The term "Jewelry" in paragraph S4.3 refers to watches, rings, and bracelets without loosely attached or dangling members. (32 F.R. 3390—March 1, 1967)]

32 F.R. 2414  
February 3, 1967

Issue of *Federal Register* in which amendment was issued and effective date of amendment

Issue of *Federal Register* in which Standard was originally issued

Part of *Code of Federal Regulations* in which Standard appears

Standard Number

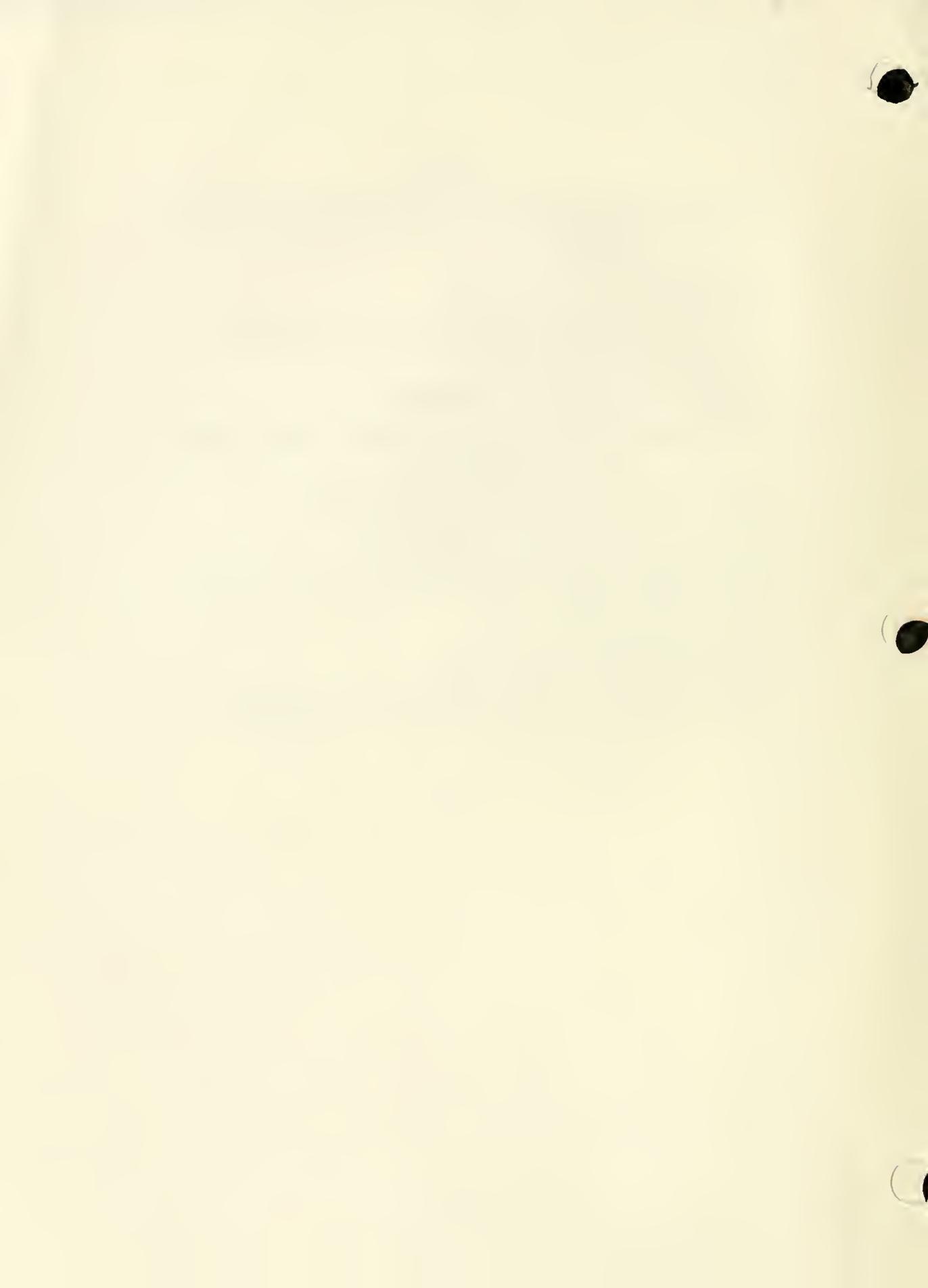
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PART 571; S 203-1



## SECTION I

- PART 520—PROCEDURES FOR CONSIDERING ENVIRONMENTAL IMPACTS
- PART 551—PROCEDURAL RULES
- PART 552—PETITIONS FOR RULEMAKING, DEFECT, AND NONCOMPLIANCE
- PART 553—RULEMAKING PROCEDURES
- PART 555—TEMPORARY EXEMPTION FROM MOTOR VEHICLE SAFETY STANDARDS
- PART 566—MANUFACTURER IDENTIFICATION
- PART 567—CERTIFICATION REGULATION
- PART 568—VEHICLES MANUFACTURED IN TWO OR MORE STAGES
- PART 569—REGROOVED TIRES
- PART 570—VEHICLE IN USE INSPECTION STANDARDS



## PREAMBLE TO PART 520—PROCEDURES FOR CONSIDERING ENVIRONMENTAL IMPACTS

[Docket No. 73-32; Notice 2]

The purpose of this amendment to Title 49 of the Code of Federal Regulations is to add a new Part 520 establishing procedures for considering environmental impacts.

A notice of proposed procedures on this subject was published on December 21, 1973 (38 FR 35018). Two comments were received on the proposed procedures: one, from the United States Environmental Protection Agency, supported the proposal and considered it to be responsive to the National Environmental Policy Act of 1969 (NEPA) and the NEPA guidelines prepared by the Council on Environmental Quality; the second, from General Motors Corporation, had some objections which have been carefully considered in this issuance of final procedures. In view of some of GM's comments, the issuance of the Department of Transportation (DOT) Order 5610.1B, "Procedures for Considering Environmental Impacts," (39 FR 35234), and further consideration within the NHTSA, the final procedures have been slightly modified.

*Definitions.* In order to differentiate a written environmental analysis submitted to the agency by its grantees or contractors from that undertaken by the agency itself, the meaning of the term "environmental assessment" has been changed from an internal agency evaluation process to an evaluation process external to the agency, and the term "environmental review" has been added to denote the written environmental analysis undertaken by the agency.

*Applicability.* "Consolidation of statements," section 520.4(f), allowing actions which have substantially similar environmental impacts to be covered by a single impact statement or environmental review culminating in a negative declaration is included in this final issuance.

GM commented that the increase in costs illustration used as an example for the project amendments exception in section 520.4(d)(5) (herein renumbered as 520.4(e)(5)) is ambiguous and could also permit a circumvention of the initial environmental evaluation process. In response to this, the section has been revised to make it clear that only project amendments with no environmental consequences are excepted from the review process. The criteria for determining which project amendments are excepted is intended to match that for excepting minor agency actions (§ 520.4(e)(6)).

Section 520.4(d)(6) of the proposed procedures was erroneously included and is accordingly deleted.

*Guidelines.* The general guidelines have been reworded, upon GM's request, to clarify that an environmental impact statement or negative declaration is to be prepared for any of the three situations enumerated under this general category.

Section 520.5(b), *Specific guidelines*, has been modified to reflect GM's comments, revised DOT Order 5640.1, and further determinations within the NHTSA. Subparagraphs (7)-(12) have been added and the original subparagraph (7) has been renumbered as (13). The agency has determined that these additional classes of actions should be enumerated in order to better identify those typical areas of environmental concern the NHTSA's activities may impact.

*Research activities.* In accordance with section 4 of final DOT Order 5610.1B, proposed implementing instructions for assessing the environmental consequences of research activities will be prepared by the Assistant Secretary of Systems Development and Technology, with the concurrence of the NHTSA. Until these final proce-

dures are promulgated, however, the guidelines set forth on this subject in the proposed procedures will be followed.

*Procedures.* The procedures subpart includes a number of additions and modifications. With respect to certain actions enumerated in Subpart A which may have an environmental significance, the official responsible for the action will prepare reviews that are much more comprehensive than the assessments proposed by the previous notice. He will conclude his review with a brief written report, to be included in the proposed or ongoing action, in which he will either recommend that a draft environmental impact statement (DEIS) be prepared to determine the environmental impact involved, or declare that the action would not have a significant effect on the quality of the environment. A review report that concludes with a "negative declaration" is not required to go through the extensive comment and review process provided for the DEIS, but it will be retained by the agency and made available to the public upon request.

Once an Associate Administrator, the Chief Counsel, or a Regional Administrator (in consultation with his Governor's Representative) determines, that an agency action under his jurisdiction requires the preparation of a DEIS, he will transmit a "notice of intent" to prepare the DEIS to the appropriate Federal, State, and local agencies and publish the notice in the *Federal Register*. In addition, a schedule of procedures and review will be developed in each case to assure completion of the DEIS before the first significant point of decision in the program or project development process. Once the

DEIS is circulated for review and comment, not less than 45 days in any case will be allowed for comment. A public hearing on a DEIS will be held when appropriate, and notice of the hearing will be issued in the *Federal Register* at least 30 days before the hearing. Final environmental impact statements (FEIS) will be prepared and distributed as soon as practicable after the expiration of the comment and hearing process.

In accordance with the final DOT order 5610.1B, a new section 520.34 has been added, establishing procedures for the review of environmental statements prepared by other agencies.

Four attachments having a direct bearing on the preparation of impact statements have been added to this issuance of the final rule and will be followed by this agency.

*Effective date:* November 4, 1975.

In consideration of the foregoing, a new Part 520, "Procedures for Considering Environmental Impacts," is added as § 520 of Title 49, Code of Federal Regulations. . . .

(Secs. 102(2)(A), 102(2)(C), Public Law 91-190, 83 Stat. 853 (42 U.S.C. 4332); secs. 2(b), 4(f), Public Law 89-670, 80 Stat. 931 (49 U.S.C. 1651(b), 1653(f)); Executive Order 11514, 35 FR 4247; 40 CFR Part 1500; DOT Order 5610.1B, 39 FR 35234; delegations of authority at 49 CFR 1.45, 1.51.)

Issued on Nov. 4, 1975.

James B. Gregory  
Administrator

**40 F.R. 52395**  
**November 10, 1975**

## PART 520—PROCEDURES FOR CONSIDERING ENVIRONMENTAL IMPACTS

### SUBPART A—GENERAL

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- 520.2 Policy.
- 520.3 Definitions.
- 520.4 Applicability.
- 520.5 Guidelines for identifying major actions significantly affecting the environment.

### SUBPART B—PROCEDURES

- 520.21 Preparation of environmental reviews, negative declarations, and notices of intent.
- 520.22 Maintenance of list of actions.
- 520.23 Preparation of draft environmental impact statements.
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- 520.25 External review of draft environmental impact statements.
- 520.26 Public hearings.
- 520.27 Legislative actions.
- 520.28 Preparation of final environmental impact statements.
- 520.29 Internal review of final environmental impact statements.
- 520.30 Availability of final environmental impact statements.
- 520.31 Amendments or supplements.
- 520.32 Emergency action procedures.
- 520.33 Timing of proposed NHTSA actions.
- 520.34 Review of environmental statements prepared by other agencies.

Attachment 1—Form and content of statement.

Attachment 2—Areas of environmental impact and Federal agencies and Fed-

eral-State agencies with jurisdiction by law or special expertise to comment thereon.

Attachment 3—Offices within Federal agencies and Federal-State agencies for information regarding the agencies' NEPA activities and for receiving other agencies' impact statements for which comments are requested.

Attachment 4—State and local agency review of impact statements.

### SUBPART A—GENERAL

#### § 520.1 Purpose and scope.

(a) Section 102(2)(C) of the National Environmental Policy Act of 1969 (83 Stat. 853; 42 U.S.C. 4332(2)(C)), as implemented by Executive Order 11514 (3 CFR, 1966-1970 Comp., p. 902) and the Council on Environmental Quality's Guidelines of April 23, 1971 (36 F.R. 7724), requires that all agencies of the Federal Government prepare detailed environmental statements on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment. The purpose of the Act is to build into the agency decision-making process careful consideration of all environmental aspects of proposed actions.

(b) This part specifies National Highway Traffic Safety Administration (NHTSA) procedures for conducting environmental assessments and reviews, and for the preparation of environmental impact statements on proposals for legislation and other major agency actions significantly affecting the quality of the human environment.

#### § 520.2 Policy.

The agency will strive to carry out the full intent and purpose of the National Environmental Policy Act of 1969 and related orders and statutes, and take positive steps to avoid any

action which could adversely affect the quality of the human environment.

**§ 520.3 Definitions.**

(a) "Environmental assessment" is a written analysis describing the environmental impact of a proposed or ongoing agency action, submitted to the agency either by its grantees or contractors, or by any person outside the agency as part of any program or project proposal within the scope of activities listed in § 520.4(b).

(b) "Environmental review" is a formal evaluation undertaken by the agency, culminating in a brief document (the environmental review report), to determine whether a proposed or ongoing NHTSA action may have a significant impact on the environment. The review document will be included in the proposed or ongoing agency action, and either support a negative declaration or recommend the preparation of a draft environmental impact statement.

(c) "Draft environmental impact statement" (DEIS) means a preliminary statement on the environmental impact of a proposed or ongoing NHTSA action which is circulated for comment and review within and outside NHTSA.

(d) "Final environmental impact statement" (FEIS) means a detailed statement which, pursuant to section 102(2)(C) of the National Environmental Policy Act, identifies and analyzes the anticipated environmental impact of a proposed or ongoing NHTSA action.

(e) "Negative declaration" means a statement prepared subsequent to an environmental review, which states that a proposed or ongoing NHTSA action will have no significant environmental impact and therefore does not require a draft or final environmental impact statement.

**§ 520.4 Applicability.**

(a) *Scope.* This part applies to all elements of NHTSA, including the Regional Offices.

(b) *Actions covered.* Except as provided in subparagraph (e) below, this part applies to the following agency actions and such actions and proposals as may be sponsored jointly with another agency:

(1) New and continuing programs and projects; budget proposals; legislative proposals by the agency; requests for appropriations; re-

ports on legislation initiated elsewhere where the agency has primary responsibility for the subject matter involved; and any renewals or reapprovals of the foregoing;

(2) Research, development, and demonstration projects; formal approvals of work plans; and associated contracts;

(3) Rulemaking and regulatory actions, including Notices of Proposed Rulemaking (NPRM); requests for procurement (RFP); requests for grants (Annual Work Programs); and contracts;

(4) All grants, loans or other financial assistance for use in State and Community projects;

(5) Annual State Highway Safety Work Programs;

(6) Construction; leases; purchases; operation of Federal facilities; and

(7) Any other activity, project, or action likely to have a significant effect on the environment.

(c) *Continuing actions.* This part applies to any action enumerated in subsection (b) above, even though such action arise from a project or program initiated prior to enactment of the National Environmental Policy Act on January 1, 1970.

(d) *Environmental assessments.* Within the scope of activities listed in § 520.4(b), any person outside the agency submitting a program or project proposal may be requested to prepare an environmental assessment of such proposed action to be included in his submission to the agency.

(e) *Exceptions.*

(1) Assistance in the form of general revenue sharing funds, distributed under the State and Local Fiscal Assistance Act of 1972, 31 U.S.C. 1221, with no control by the NHTSA over the subsequent use of such funds;

(2) Personnel actions;

(3) Administrative procurements (e.g., general supplies) and contracts for personal services;

(4) Legislative proposals originating in another agency and relating to matters not

within NHTSA's primary areas of responsibility;

(5) Project amendments (e.g., increases in costs) which have no environmental significance; and

(6) Minor agency actions that are determined by the official responsible for the actions to be of such limited scope that they clearly will not have a significant effect on the quality of the human environment.

(f) *Consolidation of statements.* Proposed actions (and alternatives thereto) having substantially similar environmental impacts may be covered by a single environmental review and environmental impact statement or negative declaration.

**§ 520.5 Guidelines for identifying major actions significantly affecting the environment.**

(a) *General guidelines.* The phrase, "major Federal actions significantly affecting the quality of the human environment," as used in this part, shall be construed with a view to the overall, cumulative impact of the actions, other Federal projects or actions in the area, and any further contemplated or anticipated actions. Therefore, an environmental impact statement should be prepared in any of the following situations:

(1) Proposed actions which are localized in their impact but which have a potential for significantly affecting the environment;

(2) Any proposed action which is likely to be controversial on environmental grounds;

(3) Any proposed action which has unclear but potentially significant environmental consequences.

(b) *Specific guidelines.* While a precise definition of environmental significance that is valid in all contexts is not possible, any of the following actions should ordinarily be considered as significantly affecting the quality of the human environment:

(1) Any matter falling under section 4(f) of the Department of Transportation Act (49 U.S.C. 1653(f)) and section 138 of Federal-aid highway legislation (23 U.S.C. 138), requiring the use of any publicly owned land from a park, recreation area, or wildlife and

waterfowl refuge of national, State, or local significance as determined by the Federal, State, or local officials having jurisdiction thereof, or any land from an historic site of national, State, or local significance;

(2) Any matter falling under section 106 of the National Historic Preservation Act of 1966 (16 U.S.C. 470(f)), requiring consideration of the effect of the proposed action on any building included in the National Register of Historic Preservation to comment on such action;

(3) Any action that is likely to affect the preservation and enhancement of sites of historical, architectural, or archaeological significance;

(4) Any action that is likely to be highly controversial regarding relocation housing;

(5) Any action that (i) divides or disrupts an established community, disrupts orderly, planned development, or is inconsistent with plans or goals that have been adopted by the community in which the project is located; or (ii) causes significantly increased congestion;

(6) Any action that (i) involves inconsistency with any Federal, State, or local law or administrative determination relating to the environmental; (ii) has a significantly detrimental impact on air or water quality or on ambient noise levels for adjoining areas; (iii) involves a possibility of contamination of a public water supply system; or (iv) affects ground water, flooding, erosion, or sedimentation;

(7) Any action that may directly or indirectly result in a significant increase in noise levels, either within a motor vehicle's closed environment or upon nearby areas;

(8) Any action that may directly or indirectly result in a significant increase in the energy or fuel necessary to operate a motor vehicle, including but not limited to the following: (i) actions which may directly or indirectly result in a significant increase in the weight of a motor vehicle; and (ii) actions which may directly or indirectly result in a significant adverse affect upon the aerodynamic drag of a motor vehicle;

(9) Any action that may directly or indirectly result in a significant increase in the amount of harmful emissions resulting from the operation of a motor vehicle;

(10) Any action that may directly or indirectly result in a significant increase in either the use of or the exposure to toxic or hazardous materials in the manufacture, operation, or disposal of motor vehicles or motor vehicle equipment.

(11) Any action that may directly or indirectly result in a significant increase in the problem of solid waste, as in the disposal of motor vehicles or motor vehicle equipment;

(12) Any action that may directly or indirectly result in a significant depletion of scarce natural resources associated with the manufacture or operation of motor vehicles or motor vehicle equipment; and

(13) Any other action that causes significant environment impact by directly or indirectly affecting human beings through adverse impacts on the environment.

(c) *Research activities.*

(1) In accordance with DOT Order 5610.1B, the Assistant Secretary for Systems Development and Technology (TST) will prepare, with the concurrence of the NHTSA, proposed procedures for assessing the environmental consequences of research activities. Until final procedures are promulgated, the following factors are to be considered for periodic evaluation to determine when an environmental statement is required for such programs:

(i) The magnitude of Federal investment in the program;

(ii) The likelihood of widespread application of the technology;

(iii) The degree of environmental impact which would occur if the technology were widely applied; and

(iv) The extent to which continued investment in the new technology is likely to restrict future alternatives.

(2) The statement or environmental review culminating in a negative declaration must be written late enough in the development process to contain meaningful information, but early

enough so that this information can practically serve as an input in the decision-making process. Where it is anticipated that an environmental impact statement may ultimately be required but its preparation is still premature, the office shall prepare a publicly available record briefly setting forth the reasons for its determination that a statement is not yet necessary. This record shall be updated at least quarterly, or as may be necessary when significant new information becomes available concerning the potential environmental impact of the program. In any case, a statement or environmental review culminating in a negative declaration must be prepared before research activities have reached a state of investment or commitment to implementation likely to determine subsequent development or restrict later alternatives. Statements on technology research and development programs shall include an analysis not only of alternative forms of the same technology that might reduce any adverse environmental impacts but also of alternative technologies that would serve the same function as the technology under consideration. Efforts shall be made to involve other Federal agencies and interested groups with relevant expertise in the preparation of such statements because the impacts and alternatives to be considered are likely to be less well defined than in other types of statements.

**Subpart B—Procedures**

**§ 520.21 Preparation of environmental reviews, negative declarations, and notices of intent.**

(a) *General responsibilities.*

(1) *Associate Administrators and Chief Counsel.* Each Associate Administrator and the Chief Counsel is responsible for determining, in accordance with Subpart A, whether the projects and activities under his jurisdiction require an environmental review, and for preparing all such reviews, negative declarations, and notices of intent.

(2) *Regional Administrators.* Each Regional Administrator, in consultation with the Governor's Representative, is responsible for determining, in accordance with Subpart A, whether proposed State activities in his Region, as stated in Annual Work Programs, require an environmental review, and for the preparation of all such reviews, negative declarations, and notices of intent.

(3) *Associate Administrator for Planning and Evaluation.* The Associate Administrator for Planning and Evaluation may request in accordance with the requirements of this order, that the appropriate Associate Administrator or Regional Administrator prepare an environmental review or environmental impact statement for any proposed or continuing NHTSA action, or comment on any environmental statement prepared by other agencies.

(b) *Coordination.* Coordination with appropriate local, State and Federal agencies should be accomplished during the early stages by the responsible official to assist in identifying areas of significance and concern. Existing procedures, including those established under the Office of Management and Budget (OMB) Revised Circular A-95, should be used to the greatest extent practicable to accomplish this early coordination.

(c) *Applicants.*

(1) Each applicant for a grant, loan, or other financial assistance for use in State and community projects may be requested to submit, with the original application, an environmental assessment of the proposed project.

(2) Under OMB Revised Circular A-95, "Evaluation, Review, and Coordination of Federal Assistance Programs and Projects," and DOT 4600.4B, "Evaluation, Review and Coordination of DOT Assistance Programs and Projects," dated February 27, 1974, a grant applicant must notify the clearinghouse of its intention to apply for Federal program assistance. The notification must solicit comments on the project and its impacts from appropriate State and local agencies. Since it is the NHTSA's policy to assure that (i) interested parties and Federal, State, and local agencies receive early notification of the decision to prepare an environmental impact statement, and

(ii) their comments on the environmental effects of the proposed Federal action are solicited at an early stage in the preparation of the draft impact statement, this early notification requirement may be met by a grant applicant by sending the notification to interested parties and agencies at the same time it is sent to the clearinghouse.

(d) *Consultants.* Consultants may prepare background or preliminary material and assist in preparing a draft or final environmental statement for which the NHTSA takes responsibility. Care should be exercised in selecting consultants, and in reviewing their work, to insure complete and objective consideration of all relevant project impacts and alternatives, particularly if the consultant may expect further contracts, based on the outcome of the environmental decision.

(e) *Environmental review report.* The environmental review shall culminate in a brief written report of the same title, which shall be included in the proposed or ongoing agency action, and which—

(1) Describes the proposed or ongoing NHTSA action, the environment affected, and the anticipated benefits;

(2) Evaluates the potential environmental impact, including those adverse impacts which cannot be avoided, should the proposal be implemented or the action continued;

(3) Assesses the alternatives to the proposed or ongoing action and their potential environmental impact.

(4) Evaluates the cumulative and long-term environmental effects of the proposed or ongoing action;

(5) Describes the irreversible and irretrievable commitments of resources involved in the proposal's implementation or the action's continuance;

(6) Identifies any known or potential conflicts with State, regional, or local plans and programs;

(7) Weighs and analyzes the anticipated benefits against the environmental and other costs of the proposed or ongoing action in a manner which reflects similar comparisons of reasonably available alternatives; and

(8) Concludes with a negative declaration or recommends the preparation of a DEIS.

(f) *Negative declarations.*

(1) If the responsible official judges that the environmental impact of a proposed or ongoing action under his jurisdiction will not significantly affect the quality of the human environment, the following declaration will be included in the environmental review report:

"It is the judgment of this agency, based on available information, that no significant environmental impact will result from execution of this action."

(2) A DEIS may be changed to a negative declaration if the public review process indicates that the proposal or ongoing action will not have a significant effect upon the environment.

(3) An index of all negative declarations and a copy of each environmental review report shall be retained by the responsible official under whose jurisdiction it was prepared and shall be made available for public inspection upon request.

(g) *Notice of intent to prepare a draft environmental impact statement.* If the responsible official under whose jurisdiction an environmental review is prepared determines that the proposed or ongoing action could have a potentially significant effect on the quality of the environment, he shall: coordinate with the Associate Administrator for Planning and Evaluation and the Chief Counsel, transmit to appropriate Federal, State and local agencies and have published in the *Federal Register* a notice of intent to prepare an environmental statement as soon as is practicable after the determination to prepare such a statement.

**§ 520.22 Maintenance of a list of actions.**

(a) The Associate Administrator for Planning and Evaluation shall be responsible for the preparation and maintenance of a list of actions for which draft or final environmental impact statements have been or are to be prepared. This list shall be on file with the Associate Administrator for Planning and Evaluation and shall be available for public inspection in the Docket

Section upon request. A copy of the initial list and its updatings at the end of each calendar quarter shall be transmitted by the Associate Administrator for Planning and Evaluation to the Assistant Secretary of Transportation for Environment and Safety (TES) and to CEQ.

(b) If a determination is made that an environmental statement is not necessary for a proposed action (1) which has been identified as normally requiring preparation of a statement, (2) which is similar to actions for which a significant number of statements have been prepared, (3) which the agency has previously announced would be the subject of a statement, or (4) for which the official responsible for such proposal has made a negative determination in response to a request from the CEQ, a record briefly setting forth the decision and the reasons for that determination shall be prepared by the responsible official. Such a record of negative determinations and any evaluations made pursuant to § 520.21 which conclude that preparation of a statement is not yet timely shall be prepared by the responsible official, submitted to the Associate Administrator for Planning and Evaluation, and made available by the Associate Administrator for Planning and Evaluation in the same manner as provided in paragraph (a) of this section for lists of statements under preparation.

**§ 520.23 Preparation of draft environmental impact statements.**

(a) *Planning stage.*

(1) When a DEIS is to be prepared, the responsible official shall promptly initiate its preparation and develop a schedule in consultation with the Associate Administrator for Planning and Evaluation, to assure completion prior to the first significant point of decision in the program or project development process.

(2) The environmental impacts of proposed activities should be initially assessed concurrently with the initial technical and economic studies.

(3) Section 102(2)(A) of NEPA requires each Federal agency to utilize a "systematic, interdisciplinary approach" to plans and programs affecting the environment. To assure that all environmental impacts are identified

and assessed, all relevant disciplines should be represented. If the necessary disciplines are not represented on the staff of the applicant or NHTSA, it is appropriate to use professional services available in other Federal, State or local agencies, universities, or consulting firms. The use of the interdisciplinary approach should not be limited to the environmental statement. This approach should also be used in the early planning stages to help assure a systematic evaluation of reasonable alternative courses of action and their potential social, economic, and environmental consequences.

(b) *Form and content requirements.* Attachment 1 of this order prescribes the form and content requirements to be followed for each draft and final environmental impact statement. The DEIS must fulfill and satisfy, to the fullest extent possible at the time it is prepared, the requirements established for final statements.

(c) *"Lead agency".* CEQ guidelines provide that when more than one Federal agency (1) directly sponsors an action, or is directly involved in an action through funding, licenses, or permits, or (2) is involved in a group of actions directly related to each other because of their functional interdependence and geographical proximity, consideration should be given to preparing one statement for all the Federal actions involved. Agencies in such cases should consider the designation of a single "lead agency" to assume supervisory responsibility for preparation of a joint statement. Where a lead agency prepares the statement, the other agencies involved should provide assistance with respect to their areas of jurisdiction and expertise. The statement should contain an evaluation of the full range of Federal actions involved, should reflect the views of all participating agencies, and should be prepared before major or irreversible actions have been taken by any of the participating agencies. Some relevant factors in determining an appropriate lead agency are: the time sequence in which the agencies become involved, the magnitude of their respective involvement, and their relative expertise with respect to the project's environmental effects.

Questions concerning "lead agency" decisions should be raised with CEQ through TES. For projects serving and primarily involving land owned by or under the jurisdiction of another Federal agency, that agency may be the appropriate lead agency.

(d) *Applicants.* Where the agency requests an applicant for financial assistance or other agency approval to submit an environmental assessment, the responsible official will (1) assist the applicant by outlining the information required, and (2) in all cases make his own evaluation of the environmental issues involved and take responsibility for the scope and content of draft and final environmental statements.

**§ 520.24 Internal processing of draft environmental impact statements.** Before circulating a DEIS for external review, the official responsible for the DEIS shall (1) receive the concurrence of the Associate Administrator for Planning and Evaluation and the Chief Counsel; and (2) prepare a memorandum for approval by the Administrator which shall—

(a) Set forth the basis on which it was determined that a potentially significant environmental effect exists;

(b) Attach the DEIS;

(c) Identify the Federal, State, and local agencies and private sources from which comments on the DEIS are proposed to be solicited (see Attachment 2); and

(d) Include a recommendation on whether a public hearing on the proposed action should be held.

**§ 520.25 External review of draft environmental impact statements.**

(a) *Requirements.* The official responsible for the DEIS shall—

(1) Transmit 5 copies of the DEIS to the CEQ and 2 copies to TES;

(2) Solicit comments from all Federal, State, and local agencies which have jurisdiction by law or special expertise with respect to the possible environmental impact involved, and from the public (see Attachment 2); and

(3) Inform the public and interested parties of the availability of the DEIS and provide copies as appropriate; and

(4) Allow a comment period of not less than 45 days from the Friday of the week following receipt of the draft impact statement by CEQ. Requests for extensions shall be granted whenever possible, and particularly when warranted by the magnitude and complexity of the statement or the extent of citizen interest.

(b) *Procedures.*

(1) *Federal and Federal-State agency review.*

(i) The DEIS shall be circulated for review to the Federal and Federal-State agencies with special expertise or jurisdiction by law with regard to the potential environmental impact involved. These agencies and their relevant areas of expertise are identified in Attachment 2.

(ii) For actions within the jurisdiction of the Environmental Protection Agency (air or water quality, solid wastes, pesticides, radiation standards, noise), the DEIS shall be sent to EPA.

(iii) For actions which would affect any property that is included in the National Register of Historic Preservation, the DEIS should be sent to the Advisory Council on Historic Preservation and the State Liaison Office for Historic Preservation.

(2) *State and local review.* Where a review of the proposed action by State and local agencies authorized to develop and enforce environmental standards is relevant, comments are to be solicited directly from such agencies with known responsibilities in environmental matters, and shall be obtained as follows:

(i) Where review of direct Federal development projects, and of projects assisted under programs listed in Attachment D to revised OMB Circular A-95 (as implemented by DOT 4600.4B "Evaluation, Review and Coordination of DOT Assistance Programs and Projects", dated February 27, 1974), takes place prior to preparation of an environmental statement, comments of the reviewing agencies on the environmental effects of the proposed project are inputs to

the environmental statement. These comments shall be attached to the draft statement when it is circulated for review and copies of the draft shall be sent to those who commented. A-95 clearinghouses or other agencies designated by the Governor may also secure comments on environmental statements. In all cases, copies of the draft environmental statements shall be sent to clearinghouses and to the applicant whose project is the subject of the statement.

(ii) Comments shall be directly obtained from appropriate State and local agencies, except where review is secured by agreement through A-95 clearinghouses, unless the Governor of the appropriate State has designated some other point for obtaining his review. Instructions for obtaining the views of such agencies are contained in the joint OMB-CEQ memorandum (see Attachment 4). Comments shall be solicited from municipalities and counties on all projects located therein.

(iii) State and local review of NHTSA procedures, regulations, and policies for administering Federal programs of assistance to State and local governments shall be obtained pursuant to procedures established by OMB Circular No. A-85.

(iv) Generally, environmental statements on legislative and budget proposals may be excluded from State and local review.

(3) *General public review.*

(i) At the time the DEIS is circulated to Federal, State, and local agencies, public availability of the DEIS for comment and review will be announced by the CEQ in the *Federal Register*. Copies of the DEIS should be sent to known interested parties, and press releases should be sent to local news media advising where the DEIS is available and how copies may be obtained. The Office of Public Affairs and Consumer Services shall maintain a list of groups, including conservation organizations and motor vehicle manufacturers, known to be interested in the agency's activities, and directly notify such groups of the availability of the DEIS or send them a copy as soon as it has been prepared.

(ii) A DEIS should be available to the public at least 30 days prior to the time of a public hearing on the DEIS.

(iii) Copies of the DEIS will be made available at the NHTSA Docket Section, Room 5108, 400 Seventh Street, S.W., Washington, D.C. 20590, and, where appropriate, NHTSA Regional Offices, at the offices of any applicants of grantees, at appropriate State, regional, and metropolitan clearing houses, and local public libraries, and furnished to public and private organizations and individuals with special expertise with respect to the potential environmental impact involved, and to those with an interest in the action who request an opportunity to comment. Copies to be made available to the public shall be provided without charge to the extent practicable, or at a fee which is not more than the actual cost of reproducing copies required to be sent to other Federal agencies, including the CEQ.

(iv) A copy of the DEIS should in all cases be sent to any applicant whose project is the subject of the statement.

(v) If a DEIS is changed to a negative declaration as a result of the public review process, all agencies and individuals that received copies and/or commented on the DEIS must be informed that a negative declaration was substituted for the DEIS and given a brief explanation of the reason for such substitution.

(c) *Utilization of Comments.*

Comments received on the draft statement, and inputs (in summary form, if appropriate) from the processes for citizen participation, shall accompany the environmental statement through the normal internal project or program review process.

**§ 520.26 Public hearings.**

(a) A public hearing on a proposed or ongoing action covered by a DEIS shall be held upon the determination by the official responsible for such action, in consultation with the Associate Administrator for Planning and Evaluation, that a public hearing would be appropriate and in the public interest. In deciding whether a public

hearing is appropriate, the responsible official should consider—

(1) The magnitude of the proposal in terms of economic costs, the geographic area involved, and the uniqueness or size of the commitment of the resources involved.

(2) The degree of interest in the proposal, as evidenced by requests from the public and from Federal, State, and local authorities that a hearing be held;

(3) The likelihood that information will be presented at the hearing which will be of assistance to the agency in fulfilling its responsibilities under the NEPA;

(4) The extent to which public involvement already has been achieved through other means, such as earlier public hearings, meetings with citizen representatives, and/or written comments on the proposed action; and

(5) The extent of potential environmental impact.

(b) If it is determined that a public hearing is to be held in accordance with paragraph (a) of this section, the official responsible for the action shall both announce the hearing through newspaper articles, direct notification to interested parties, and clearinghouses, and cause a notice to be issued in the *Federal Register* at least 30 days prior to the time of such hearing—

(1) Identifying the subject matter of the hearing;

(2) Announcing the date, time, and place of the hearing and the procedures to be followed; and

(3) Announcing the availability of the DEIS and any other information, as appropriate, for public inspection at one or more locations in the area affected by the action.

**§ 520.27 Legislative actions.**

(a) A DEIS on both legislative proposals and reports for which NHTSA either develops the Departmental position or originates the legislation will be cleared with TES, filed with CEQ, and submitted to the Office of Management and Budget through the normal DOT and NHTSA legislative process.

(b) The preparation, circulation, and filing of the environmental statement shall be in accordance with OMB Bulletin 72-6, "Proposed Federal Actions Affecting the Environment."

(c) A DEIS and any comments that have been received should be available to the Congress and to the public for consideration in connection with the proposed legislation or report on proposed legislation. In cases where the scheduling of Congressional hearings on recommendations or reports on proposals for legislation which the Department has forwarded to the Congress does not allow adequate time for the completion of a FEIS, a DEIS may be furnished to the Congress and made available to the public pending transmittal of the comments as received and the final text.

**§ 520.28 Preparation of final environmental impact statements.**

(a) If the action is to go forward and the DEIS has not been changed to a negative declaration, as soon as practicable after the expiration of the comment period and hearing process, if any, the official responsible for the action shall prepare a final environmental impact statement (FEIS), taking into account all comments received and issues raised during such period and process.

(b) The FEIS shall conform to the guidelines for form and content in Attachment 1.

(c) The FEIS shall then be submitted to the Chief Counsel by the official responsible for the action, for determination of legal sufficiency.

**§ 520.29 Internal review of final environmental impact statements.**

(a) Upon completion of the review for legal sufficiency of the FEIS, the Chief Counsel shall transmit 2 copies of the FEIS to TES for concurrence. Unless other notification is provided within 2 weeks after receipt in TES, the statement will be considered concurred in by TES.

(b) After concurrence by TES, the FEIS will be transmitted by the Chief Counsel to the Administrator for approval.

(c) If an action requires the personal approval of the Secretary or Deputy Secretary pursuant to a request by them or by TES, TGC, or the NHTSA office originating the action, the final environmental statement shall be accompanied by a brief cover memorandum requesting the Secretary's or Deputy Secretary's approval of the action.

(1) The memorandum shall have signature lines for the concurrence of the Assistant Secretary for Environment, Safety, and Consumer Affairs, the General Counsel, and the Deputy Secretary, and for the approval of the Secretary or Deputy Secretary.

(2) TES, in conjunction with the Executive Secretary, is responsible for informing the Assistant Secretary for Congressional and Intergovernmental Affairs and the Office of Public Affairs of the Secretary's decisions so that they, in coordination with the operating administrations or other Secretarial Offices involved, may take the appropriate actions.

**§ 520.30 Availability of final environmental impact statements.**

(a) Pending final approval and filing with CEQ, a proposed FEIS may be made available to the public and Federal, State, or local agencies if it carries a notation that it is not approved and filed.

(b) After approval by the Administrator, the Associate Administrator for Planning and Evaluation will send 5 copies of the FEIS (together with comments) to the CEQ; individual copies with comments attached to the EPA and all Federal, State, and local agencies and members of the public who submitted comments on the DEIS or requested copies of the FEIS. If the length of the statement or the number of comments make this distribution requirement highly impractical, TES should be consulted to consider an alternative arrangement.

(c) Copies of the FEIS will be made available in the NHTSA Docket Section, Room 5108, 400 Seventh Street, S.W., Washington, D.C. 20590, and, where appropriate, NHTSA Regional Offices, at the offices of any applicants or grantees, and at appropriate State, regional, and metropolitan clearinghouses and, where the impact is localized, public libraries.

(d) The official responsible for the action shall, upon request, make available copies of the FEIS and substantive comments received on the DEIS without charge to the extent practicable, or at a fee which is not more than the actual cost or reproducing copies.

**§ 520.31 Amendments or supplements.** A draft or final environmental impact statement may be amended or supplemented. Supplements or amendments should be considered when substantial changes are made in the proposed or ongoing action that will introduce a new or changed environmental effect of significance to the quality of the environment, or significant new information becomes available concerning its environmental aspects. In such cases, the supplement or amendment shall be processed in consultation with TES with respect to the need for, or desirability of, recirculating the statement for the appropriate period. TES concurrence must be secured before issuance.

**§ 520.32 Emergency action procedures.** The CEQ Guidelines allow modification of requirements in case of a national emergency, a disaster or similar great urgency. The processing times may be reduced, or if the emergency situation warrants, preparation and processing of a DEIS, FEIS, or negative declaration may be abbreviated. Such procedural changes, however, should be requested only for those projects where the need for immediate action requires processing in other than the normal manner.

**§ 520.33 Timing of proposed NHTSA actions.** To the maximum extent practicable, no administrative action (i.e., any proposed action to be taken by the agency other than agency proposals for legislation to Congress, budget proposals, or agency reports on legislation) subject to this part and covered by an environmental impact statement shall be taken sooner than 90 days after a DEIS has been circulated for comment, furnished to the CEQ, and made public. Neither shall such administrative action be taken sooner than 30 days after the FEIS (together with

comments) has been filed with CEQ, and made available to commenting agencies and the public. If the FEIS is filed within 90 days after a DEIS has been circulated for comment, furnished to the CEQ and made public, the 30-day period and 90-day period may run concurrently to the extent that they overlap. The 90-day time period is measured from the date of publication in the *Federal Register* of the list of weekly filings of environmental impact statements with the CEQ, but the 30-day period is computed from the date of receipt by the CEQ.

**§ 520.34 Comments on environmental statements prepared by other agencies.**

(a) All requests for NHTSA's views on a DEIS or a proposed action undergoing environmental review by another agency will be transmitted to the Associate Administrator for Planning and Evaluation for action or referral to TES where appropriate. Offices within NHTSA may be requested by the Associate Administrator for Planning and Evaluation to supply any pertinent information and comments for a coordinated agency response.

(b) NHTSA's comments and the comments of any offices responding to a request by the Associate Administrator for Planning and Evaluation should be organized in a manner consistent with the structure of an environmental review set out in § 520.21(e). NHTSA programs that are environmentally related to the proposed action under review should be identified so interrelationships may receive due consideration.

(c) Copies of NHTSA's comments on environmental statements prepared by other agencies shall be distributed as follows:

- (1) The original and 1 copy to the requesting agency;
- (2) 1 copy to TES-70; and
- (3) 5 copies to CEQ.

(d) Requests by the public for copies should be referred to the agency originating the statement.

**ATTACHMENT 1**

**FORM AND CONTENT OF STATEMENT**

1. Form. a. Each statement will be headed as follows:

DEPARTMENT OF  
TRANSPORTATION  
NATIONAL HIGHWAY TRAFFIC  
SAFETY ADMINISTRATION

(Draft) Environmental Impact Statement Pursuant to section 102(2)(C), Pub. L. 91-190; 83 Stat. 853; 42 U.S.C. 4332(2)(C).

b. The heading specified above shall be modified to indicate that the statement also covers sections 4(f) of the DOT Act or 106 of the National Historic Preservation Act, when appropriate.

c. Each statement will, as a minimum, contain sections corresponding to paragraph 3 herein, supplemented as necessary to cover other matters provided in this Attachment.

d. The format for the summary to accompany draft and final environmental statements is as follows:

**SUMMARY**

(Check one)      ( ) Draft      ( ) Final

Department of Transportation, National Highway Traffic Safety Administration. Name, address, and telephone number of individual who can be contacted for additional information about the proposed action or the statement.

(Note: DOT Order 2100.2 prescribed procedure for reporting public contacts in rulemaking.)

(1) Name of Action. (Check one) ( ) Administrative Action. ( ) Legislative Action.

(2) Brief description of action indicating what States (and counties) are particularly affected.

(3) Summary of environmental impact and adverse environmental effects.

(4) List alternatives considered.

(5) (a) (For draft statements) List all Federal, State, and local agencies from which comments have been requested.

(b) (For final statements) List all Federal, State, and local agencies and other sources from which written comments have been received.

(6) Dates the draft statement and the final statement, if issued, were made available to the Council on Environmental Quality and the public.

2. Guidance as to content of statement. The following paragraphs of this Attachment are intended to be considered, where relevant, as guidance regarding the content of environmental statements. This guidance is expected to be supplemented by research reports, guidance on methodology, and other material from the literature as may be pertinent to evaluation of relevant environmental factors.

3. General content. The following points are to be covered:

a. A description of the proposed Federal action (e.g., "The proposed Federal action is approval of a grant application to construct \* \* \*"), a statement of its purpose, and a description of the environment affected, including information, summary technical data, and maps and diagrams where relevant, adequate to permit an assessment of potential environmental impact by commenting offices and the public.

(1) Highly technical and specialized analyses and data should generally be avoided in the body of the draft impact statement. Such materials should be appropriately summarized in the body of the environmental statement and attached as appendices or footnoted with adequate bibliographic references.

(2) The statement should succinctly describe the environment of the area affected as it exists prior to a proposed action, including other related Federal activities in the area, their interrelationships, and cumulative environmental impact. The amount of detail provided in such descriptions should be commensurate with the extent and expected impact of the action, and with the amount of information required at the particular level of decision making (planning, feasibility, design, etc.). In order to insure ac-

6. Impacts of the proposed action on the human environment involving community disruption include a description.

a. The statement should include a description of probable impact sufficient to enable an understanding of the extent of the environmental and social impact of the project alternatives and to consider whether relocation problems can be properly handled. This would include the following information obtainable by visual inspection of the proposed affected area and from secondary sources and community sources when available.

(1) An estimate of the households to be displaced including the family characteristics (e.g., minorities, and income levels, tenure, the elderly, large families).

(2) Impact on the human environment of an action which divides or disrupts an established community, including where pertinent, the effect of displacement on types of families and individuals affected, effect of streets cut off, separation of residences from community facilities, separation of residential areas.

(3) Impact on the neighborhood and housing to which relocation is likely to take place (e.g., lack of sufficient housing for large families, doublings up).

(4) An estimate of the businesses to be displaced, and the general effect of business dislocation on the economy of the community.

(5) A discussion of relocation housing in the area and the ability to provide adequate relocation housing for the types of families to be displaced. If the resources are insufficient to meet the estimated displacement needs, a description of the actions proposed to remedy this situation including, if necessary, use of housing of last resort.

(6) Results of consultation with local officials and community groups regarding the impacts to the community affected. Relocation agencies and staff and other social agencies can help to describe probable social impacts of this proposed action.

(7) Where necessary, special relocation advisory services to be provided the elderly, handicapped and illiterate regarding inter-

pretations of benefits, assistance in selecting replacement housing and consultation with respect to acquiring, leasing, and occupying replacement housing.

b. This data should provide the preliminary basis for assurance of the availability of relocation housing as required by DOT 5620.1, Replacement Housing Policy, dated June 24, 1970, and 49 CFR 25.53.

7. Considerations relating to pedestrians and bicyclists. Where appropriate, the statement should discuss impacts on, and consideration to be given in the development of the project to pedestrian and bicycle access, movement and safety within the affected area, particularly in medium and high density commercial and residential areas.

8. Other social impacts. The general social groups specially benefitted or harmed by the proposed action should be identified in the statement including the following:

a. Particular effects of a proposal on the elderly, handicapped, non-drivers, transit dependent, or minorities should be described to the extent reasonably predictable.

b. How the proposal will facilitate or inhibit their access to jobs, educational facilities, religious institutions, health and welfare services, recreational facilities, social and cultural facilities, pedestrian movement facilities, and public transit services.

9. Standards as to noise, air, and water pollution. The statement shall reflect sufficient analysis of the effects of the proposed action on attainment and maintenance of any environmental standards established by law or administrative determination (e.g., noise, ambient air quality, water quality) including the following documentation:

a. With respect to water quality, there should be consultation with the agency responsible for the State water pollution control program as to conformity with standards and regulations regarding storm sewer discharge sedimentation control, and other non-point source discharges.

b. The comments or determinations of the offices charged with administration of the State's implementation plan for air quality as

to the consistency of the project with State plans for the implementation of ambient air quality standards.

c. Conformity to adopted noise standards, compatible if appropriate, with different land uses.

10. Energy supply and natural resources development. Where applicable, the statement should reflect consideration of whether the project or program will have any effect on either the production or consumption of energy and other natural resources, and discuss such effects if they are significant.

11. Flood hazard evaluation. When an alternative under consideration encroaches on a flood plain, the statement should include evidence that studies have been made and evidence of consultations with agencies with expertise have been carried out. Necessary measures to handle flood hazard problems should be described. In compliance with Executive Order 11296, and Flood Hazard Guidelines for Federal Executive Agencies, promulgated by the Water Resources Council, or how such requirements can be met during project development.

12. Considerations relating to wetlands or coastal zones. Where wetlands or coastal zones are involved, the statement should include:

a. Information on location, types, and extent of wetlands areas which might be affected by the proposed action.

b. An assessment of the impacts resulting from both construction and operation of the project on the wetlands and associated wildlife, and measures to minimize adverse impacts.

c. A statement by the local representative of the Department of the Interior, and any other

responsible officials with special expertise, setting forth his views on the impacts of the project on the wetlands, the worth of the particular wetlands areas involved to the community and to the Nation, and recommendations as to whether the proposed action should proceed, and, if applicable, along what alternative route.

d. Where applicable, a discussion of how the proposed project relates to the State coastal zone management program for the particular State in which the project is to take place.

13. Construction impacts. In general, adverse impacts during construction will be of less importance than long-term impacts of a proposal. Nonetheless, statements should appropriately address such matters as the following, identifying any special problem areas:

a. Noise impacts from construction and any specifications setting maximum noise levels.

b. Disposal of spoil and effect on borrow areas and disposal sites (include specifications where special problems are involved).

c. Measures to minimize effects on traffic and pedestrians.

14. Land use and urban growth. The statement should include, to the extent relevant and predictable:

a. The effect of the project on land use, development patterns, and urban growth.

b. Where significant land use and development impacts are anticipated, identify public facilities needed to serve the new development and any problems or issues which would arise in connection with these facilities, and the comments of agencies that would provide these facilities.

## ATTACHMENT 2

**AREAS OF ENVIRONMENTAL IMPACT AND FEDERAL AGENCIES AND FEDERAL-STATE AGENCIES<sup>1</sup> WITH JURISDICTION BY LAW OR SPECIAL EXPERTISE TO COMMENT THEREON<sup>2</sup>**

## AIR

*Air Quality*

- Department of Agriculture—  
Forest Service (effects on vegetation)
- Atomic Energy Commission (radioactive substances)
- Department of Health, Education, and Welfare  
Environmental Protection Agency
- Department of the Interior—  
Bureau of Mines (fossil and gaseous fuel combustion)  
Bureau of Sport Fisheries and Wildlife (effect on wildlife)  
Bureau of Outdoor Recreation (effect on recreation)  
Bureau of Land Management (public lands)  
Bureau of Indian Affairs (Indian lands)
- National Aeronautics and Space Administration (remote sensing, aircraft emissions)
- Department of Transportation—  
Assistant Secretary for Systems Development and Technology (auto emissions)  
Coast Guard (vessel emissions)  
Federal Aviation Administration (aircraft emissions)

<sup>1</sup>River Basin Commissions (Delaware, Great Lakes, Missouri, New England, Ohio, Pacific Northwest, Souris-Red-Rainy, Susquehanna, Upper Mississippi) and similar Federal-State agencies should be consulted on actions affecting the environment of their specific geographic jurisdictions.

<sup>2</sup>In all cases where a proposed action will have significant international environmental effects, the Department of State should be consulted, and should be sent a copy of any draft and final impact statement which covers such action.

*Weather Modification*

- Department of Agriculture—  
Forest Service
- Department of Commerce  
National Oceanic and Atmospheric Administration
- Department of Defense—  
Department of the Air Force
- Department of the Interior  
Bureau of Reclamation

## WATER RESOURCES COUNCIL

## WATER

*Water Quality*

- Department of Agriculture—  
Soil Conservation Service  
Forest Service
- Atomic Energy Commission (radioactive substances)
- Department of the Interior—  
Bureau of Reclamation  
Bureau of Land Management (public lands)  
Bureau of Indian Affairs (Indian lands)  
Bureau of Sport Fisheries and Wildlife  
Bureau of Outdoor Recreation  
Geological Survey  
Office of Saline Water
- Environmental Protection Agency
- Department of Health, Education, and Welfare
- Department of Defense—  
Army Corps of Engineers  
Department of the Navy (ship pollution control)
- National Aeronautics and Space Administration (remote sensing)
- Department of Transportation—  
Coast Guard (oil spills, ship sanitation)
- Department of Commerce—  
National Oceanic and Atmospheric Administration
- Water Resources Council
- River Basin Commissions (as geographically appropriate)

*Marine Pollution, Commercial Fishery  
Conservation, and Shellfish Sanitation*

Department of Commerce—  
National Oceanic and Atmospheric Administration

Department of Defense—  
Army Corps of Engineers  
Office of the Oceanographer of the Navy

Department of Health, Education, and Welfare

Department of the Interior—  
Bureau of Sport Fisheries and Wildlife  
Bureau of Outdoor Recreation  
Bureau of Land Management (outer continental shelf)  
Geological Survey (outer continental shelf)

Department of Transportation—  
Coast Guard

Environmental Protection Agency

National Aeronautics and Space Administration (remote sensing)

Water Resources Council

River Basin Commissions (as geographically appropriate)

*Waterway Regulation and Stream  
Modification*

Department of Agriculture—  
Soil Conservation Service

Department of Defense—  
Bureau of Reclamation  
Army Corps of Engineers

Department of the Interior—  
Bureau of Sport Fisheries and Wildlife  
Bureau of Outdoor Recreation  
Geological Survey

Department of Transportation—  
Coast Guard

Environmental Protection Agency

National Aeronautics and Space Administration (remote sensing)

Water Resources Council

River Basin Commissions (as geographically appropriate)

FISH AND WILDLIFE

Department of Agriculture—  
Forest Service  
Soil Conservation Service

Department of Commerce—  
National Oceanic and Atmospheric Administration (marine species)

Department of the Interior—  
Bureau of Sport Fisheries and Wildlife  
Bureau of Land Management  
Bureau of Outdoor Recreation

Environmental Protection Agency

SOLID WASTE

Atomic Energy Commission (radioactive waste)

Department of Defense—  
Army Corps of Engineers

Department of Health, Education, and Welfare

Department of the Interior—  
Bureau of Mines (mineral waste, mine acid waste, municipal solid waste, recycling)  
Bureau of Land Management (public lands)  
Bureau of Indian Affairs (Indian lands)  
Geological Survey (geologic and hydrologic effects)  
Office of Saline Water (demineralization)

Department of Transportation—  
Coast Guard (ship sanitation)

Environmental Protection Agency

River Basin Commissions (as geographically appropriate)

Water Resources Council

NOISE

Department of Commerce—  
National Bureau of Standards

Department of Health, Education, and Welfare

Department of Housing and Urban Development (land use and building materials aspects)

Department of Labor—  
Occupational Safety and Health Administration

Department of Transportation—  
 Assistant Secretary for Systems Development  
 and Technology  
 Environmental Protection Agency  
 Federal Aviation Administration, Office of  
 Noise Abatement  
 National Aeronautics and Space Administration

## RADIATION

Atomic Energy Commission  
 Department of Commerce—  
 National Bureau of Standards  
 Department of Health, Education, and Welfare  
 Department of the Interior—  
 Bureau of Mines (uranium mines)  
 Mining Enforcement and Safety Administra-  
 tion (uranium mines)  
 Environmental Protection Agency

## HAZARDOUS SUBSTANCES

*Toxic Materials*

Atomic Energy Commission (radioactive sub-  
 stances)  
 Department of Agriculture—  
 Agricultural Research Service  
 Consumer and Marketing Service  
 Department of Commerce—  
 National Oceanic and Atmospheric Administra-  
 tion  
 Department of Defense  
 Department of Health, Education, and Welfare  
 Environmental Protection Agency

*Food Additives and Contamination of  
 Foodstuffs*

Department of Agriculture—  
 Consumer and Marketing Service (meat and  
 poultry products)  
 Department of Health, Education, and Welfare  
 Environmental Protection Agency

*Pesticides*

Department of Agriculture—  
 Agricultural Research Service (biological con-  
 trols, food and fiber production)  
 Consumer and Marketing Service  
 Forest Service  
 Department of Commerce—  
 National Oceanic and Atmospheric Administra-  
 tion  
 Department of Health, Education, and Welfare  
 Department of the Interior—  
 Bureau of Sport Fisheries and Wildlife (fish  
 and wildlife effects)  
 Bureau of Land Management (public lands)  
 Bureau of Indian Affairs (Indian lands)  
 Bureau of Reclamation (irrigated lands)  
 Environmental Protection Agency

*Transportation and Handling of Hazardous  
 Materials*

Atomic Energy Commission (radioactive sub-  
 stances)  
 Department of Commerce—  
 Maritime Administration  
 National Oceanic and Atmospheric Administra-  
 tion (effects on marine life and the coastal  
 zone)  
 Department of Defense—  
 Armed Services Explosive Safety Board  
 Army Corps of Engineers (navigable water-  
 ways)  
 Department of Transportation  
 Federal Highway Administration, Bureau of  
 Motor Carrier Safety  
 Coast Guard  
 Federal Railroad Administration  
 Federal Aviation Administration  
 Assistant Secretary for Systems Development  
 and Technology  
 Office of Hazardous Materials  
 Office of Pipeline Safety  
 Environmental Protection Agency

ENERGY SUPPLY AND NATURAL RESOURCES  
DEVELOPMENT

*Electric Energy Development, Generation,  
and Transmission, and Use*

Atomic Energy Commission (nuclear)  
Department of Agriculture—  
Rural Electrification Administration (rural  
areas)  
Department of Defense—  
Army Corps of Engineers (hydro)  
Department of Health, Education, and Welfare  
(radiation effects)  
Department of Housing and Urban Development  
(urban areas)  
Department of the Interior—  
Bureau of Indian Affairs (Indian lands)  
Bureau of Land Management (public lands)  
Bureau of Reclamation  
Power Marketing Administrations  
Geological Survey  
Bureau of Sport Fisheries and Wildlife  
Bureau of Outdoor Recreation  
National Park Service  
Environmental Protection Agency  
Federal Power Commission (hydro, transmission,  
and supply)  
River Basin Commissions (as geographically ap-  
propriate)  
Tennessee Valley Authority  
Water Resources Council

*Petroleum Development, Extraction,  
Refining, Transport, and Use*

Department of the Interior—  
Office of Oil and Gas  
Bureau of Mines  
Geological Survey  
Bureau of Land Management (public lands  
and outer continental shelf)  
Bureau of Indian Affairs (Indian lands)  
Bureau of Sport Fisheries and Wildlife (effects  
on fish and wildlife)  
Bureau of Outdoor Recreation  
National Park Service  
Department of Transportation (Transport and  
Pipeline Safety)  
Environmental Protection Agency  
Interstate Commerce Commission

*Natural Gas Development, Production,  
Transmission, and Use*

Department of Housing and Urban Development  
(urban areas)  
Department of the Interior—  
Office of Oil and Gas  
Geological Survey  
Bureau of Mines  
Bureau of Land Management (public lands)  
Bureau of Indian Affairs (Indian lands)  
Bureau of Sport Fisheries and Wildlife  
Bureau of Outdoor Recreation  
National Park Service  
Department of Transportation (transport and  
safety)  
Environmental Protection Agency  
Federal Power Commission (production, trans-  
mission, and supply)  
Interstate Commerce Commission  
  
*Coal and Minerals Development, Mining,  
Conversion, Processing, Transport, and Use*  
Appalachian Regional Commission  
Department of Agriculture—  
Forest Service  
Department of Commerce  
Department of Interior—  
Office of Coal Research  
Mining Enforcement and Safety Administra-  
tion  
Bureau of Mines  
Geological Survey  
Bureau of Indian Affairs (Indian lands)  
Bureau of Land Management (public lands)  
Bureau of Sport Fisheries and Wildlife  
Bureau of Outdoor Recreation  
National Park Service  
Department of Labor—  
Occupational Safety and Health Administra-  
tion  
Department of Transportation  
Environmental Protection Agency  
Interstate Commerce Commission  
Tennessee Valley Authority

*Renewable Resource Development, Production,  
Management, Harvest, Transport, and Use*

Department of Agriculture—  
 Forest Service  
 Soil Conservation Service

Department of Commerce

Department of Housing and Urban Development  
 (building materials)

Department of the Interior—  
 Geological Survey  
 Bureau of Land Management (public lands)  
 Bureau of Indian Affairs (Indian lands)  
 Bureau of Sport Fisheries and Wildlife  
 Bureau of Outdoor Recreation  
 National Park Service

Department of Transportation

Environmental Protection Agency

Interstate Commerce Commission (freight rates)

*Energy and Natural Resources Conservation*

Department of Agriculture—  
 Forest Service  
 Soil Conservation Service

Department of Commerce—  
 National Bureau of Standards (energy efficiency)

Department of Housing and Urban Development—  
 Federal Housing Administration (housing standards)

Department of the Interior—  
 Office of Energy Conservation  
 Bureau of Mines  
 Bureau of Reclamation  
 Geological Survey  
 Power Marketing Administration

Department of Transportation

Environmental Protection Agency

Federal Power Commission

General Services Administration (design and operation of buildings)

Tennessee Valley Authority

Federal Energy Administration

## LAND USE AND MANAGEMENT

*Land Use Changes, Planning and Regulation  
or Land Development*

Department of Agriculture—  
 Forest Service (forest lands)  
 Agricultural Research Service (agricultural lands)

Department of Housing and Urban Development

Department of the Interior—  
 Office of Land Use and Water Planning  
 Bureau of Land Management (public lands)  
 Bureau of Indian Affairs (Indian lands)  
 Bureau of Sport Fisheries and Wildlife (wildlife refuges)  
 Bureau of Outdoor Recreation (recreation lands)  
 National Park Service (NPS units)

Department of Transportation

Environmental Protection Agency (pollution effects)

National Aeronautics and Space Administration (remote sensing)

River Basins Commissions (as geographically appropriate)

*Public Land Management*

Department of Agriculture—  
 Forest Service (forests)

Department of Defense

Department of the Interior—  
 Bureau of Land Management  
 Bureau of Indian Affairs (Indian lands)  
 Bureau of Sport Fisheries and Wildlife (wildlife refuges)  
 Bureau of Outdoor Recreation (recreation lands)  
 National Park Service (NPS units)

Federal Power Commission (project lands)

General Services Administration

National Aeronautics and Space Administration (remote sensing)

Tennessee Valley Authority (project lands)

PROTECTION OF ENVIRONMENTALLY CRITICAL AREAS  
—FLOODPLAINS, WETLANDS, BEACHES AND  
DUNES, UNSTABLE SOILS, STEEP SLOPES,  
AQUIFER RECHARGE AREAS, ETC.

Department of Agriculture—  
Agricultural Stabilization and Conservation  
Service  
Soil Conservation Service  
Forest Service

Department of Commerce—  
National Oceanic and Atmospheric Admin-  
istration (coastal areas)

Department of Defense—  
Army Corps of Engineers

Department of Housing and Urban Development  
(urban and floodplain areas)

Department of the Interior—  
Office of Land Use and Water Planning  
Bureau of Outdoor Recreation  
Bureau of Reclamation  
Bureau of Sport Fisheries and Wildlife  
Bureau of Land Management  
Geological Survey

Environmental Protection Agency (pollution ef-  
fects)

National Aeronautics and Space Administration  
(remote sensing)

River Basins Commissions (as geographically ap-  
propriate)

Water Resources Council

#### LAND USE IN COASTAL AREAS

Department of Agriculture—  
Forest Service  
Soil Conservation Service (soil stability, hy-  
drology)

Department of Commerce—  
National Oceanic and Atmospheric Administra-  
tion (impact on marine life and coastal zone  
management)

Department of Defense—  
Army Corps of Engineers (beaches, dredge and  
fill permits, Refuse Act permits)

Department of Housing and Urban Develop-  
ment (urban areas)

Department of the Interior—  
Office of Land Use and Water Planning  
Bureau of Sport Fisheries and Wildlife  
National Park Service  
Geological Survey  
Bureau of Outdoor Recreation  
Bureau of Land Management (public lands)

Department of Transportation—  
Coast Guard (bridges, navigation)

Environmental Protection Agency (pollution ef-  
fects)

National Aeronautics and Space Administration  
(remote sensing)

#### REDEVELOPMENT AND CONSTRUCTION IN BUILT-UP AREAS

Department of Commerce—  
Economic Development Administration (desig-  
nated areas)

Department of Housing and Urban Development

Department of the Interior—  
Office of Land Use and Water Planning

Department of Transportation  
Environmental Protection Agency

General Services Administration

Office of Economic Opportunity

#### DENSITY AND CONGESTION MITIGATION

Department of Health, Education, and Welfare

Department of Housing and Urban Development

Department of the Interior—  
Office of Land Use and Water Planning  
Bureau of Outdoor Recreation

Department of Transportation  
Environmental Protection Agency

#### NEIGHBORHOOD CHARACTER AND CONTINUITY

Department of Health, Education, and Welfare

Department of Housing and Urban Development

National Endowment for the Arts

Office of Economic Opportunity

### IMPACTS ON LOW-INCOME POPULATIONS

Department of Commerce—  
 Economic Development Administration (designated areas)  
 Department of Health, Education, and Welfare  
 Department of Housing and Urban Development  
 Office of Economic Opportunity

### HISTORIC, ARCHITECTURAL, AND ARCHEOLOGICAL PRESERVATION

Advisory Council on Historic Preservation  
 Department of Housing and Urban Development  
 Department of the Interior—  
 National Park Service  
 Bureau of Land Management (public lands)  
 Bureau of Indian Affairs (Indian lands)  
 General Services Administration  
 National Endowment for the Arts

### SOIL AND PLANT CONSERVATION AND HYDROLOGY

Department of Agriculture—  
 Soil Conservation Service  
 Agriculture Service  
 Forest Service  
 Department of Commerce—  
 National Oceanic and Atmospheric Administration  
 Department of Defense—  
 Army Corps of Engineers (dredging, aquatic plants)  
 Department of Health, Education, and Welfare

Department of the Interior  
 Bureau of Land Management  
 Bureau of Sport Fisheries and Wildlife  
 Geological Survey  
 Bureau of Reclamation  
 Environmental Protection Agency  
 National Aeronautics and Space Administration (remote sensing)  
 River Basin Commissions (as geographically appropriate)  
 Water Resources Council

### OUTDOOR RECREATION

Department of Agriculture  
 Forest Service  
 Soil Conservation Service  
 Department of Defense—  
 Army Corps of Engineers  
 Department of Housing and Urban Development (urban areas)  
 Department of the Interior—  
 Bureau of Land Management  
 National Park Service  
 Bureau of Outdoor Recreation  
 Bureau of Sport Fisheries and Wildlife  
 Bureau of Indian Affairs  
 Environmental Protection Agency  
 National Aeronautics and Space Administration (remote sensing)  
 River Basin Commissions (as geographically appropriate)  
 Water Resources Council

### ATTACHMENT 3

#### OFFICES WITHIN FEDERAL AGENCIES AND FEDERAL-STATE AGENCIES FOR INFORMATION REGARDING THE AGENCIES' NEPA ACTIVITIES AND FOR RECEIVING OTHER AGENCIES' IMPACT STATEMENTS FOR WHICH COMMENTS ARE REQUESTED

##### ADVISORY COUNCIL ON HISTORIC PRESERVATION

Office of Architectural and Environmental Preservation, Advisory Council on Historic Preservation, Suite 430, 1522 K Street N.W., Washington, D.C. 20005 254-3974.

Regional Administrator, I, U.S. Environmental Protection Agency, Room 2303, John F. Kennedy Federal Bldg., Boston, Mass. 02203 (617) 223-7210.

Regional Administrator, II, U.S. Environmental Protection Agency, Room 908, 26 Federal Plaza, New York, New York 10007 (212) 264-2525.

Regional Administrator, III, U.S. Environmental Protection Agency, Curtis Bldg., 6th & Walnut Sts., Philadelphia, Pa. 19106 (215) 597-9801.

Regional Administrator, IV, U.S. Environmental Protection Agency, 1421 Peachtree Street, N.E., Atlanta, Ga. 30309 (404) 526-5727.

Regional Administrator, V, U.S. Environmental Protection Agency, 1 N. Wacker Drive, Chicago, Illinois 60606 (312) 353-5250.

Regional Administrator, VI, U.S. Environmental Protection Agency, 1600 Patterson Street, Suite 1100, Dallas, Texas 75201 (214) 749-1962.

Regional Administrator, VII, U.S. Environmental Protection Agency, 1735 Baltimore Avenue, Kansas City, Missouri 64108 (816) 374-5493.

Regional Administrator, VIII, U.S. Environmental Protection Agency, Suite 900, Lincoln Tower, 1860 Lincoln Street, Denver, Colorado 80203 (303) 837-3895.

Regional Administrator, IX, U.S. Environmental Protection Agency, 100 California Street, San Francisco, California 94111 (415) 556-2320.

Regional Administrator, X, U.S. Environmental Protection Agency, 1200 Sixth Avenue, Seattle, Washington 98101 (206) 442-1220.

##### ENVIRONMENTAL PROTECTION AGENCY<sup>1</sup>

Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

New Jersey, New York, Puerto Rico, Virgin Islands

Delaware, Maryland, Pennsylvania, Virginia, West Virginia, District of Columbia

Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee

Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin

Arkansas, Louisiana, New Mexico, Texas, Oklahoma

Iowa, Kansas, Missouri, Nebraska

Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming

Arizona, California, Hawaii, Nevada, American Samoa, Guam, Trust Territories of Pacific Islands, Wake Island

Alaska, Idaho, Oregon, Washington

##### DEPARTMENT OF AGRICULTURE<sup>2</sup>

Office of the Secretary, Attn: Coordinator, Environmental Quality Activities, U.S. Department of Agriculture, Washington, D.C. 20250 447-3965.

<sup>1</sup>Contact the Office of Federal Activities for environmental statements concerning legislation, regulations, national program proposals, or other major policy issues.

For all other EPA consultation, contact the Regional Administrator in whose area the proposed action (e.g., highway or water resource construction projects) will take place. The Regional Administrators will coordinate the EPA review. Addresses of the Regional Administrators, and the areas covered by their regions are as follows:

Director, Office of Federal Activities, Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460 755-0777.

<sup>2</sup>Requests for comments or information from individual units of the Department of Agriculture, e.g., Soil Conservation Service, Forest Service, etc. should be sent to the Office of the Secretary, Department of Agriculture, at the address given above.

## APPALACHIAN REGIONAL COMMISSION

Office of the Alternate Federal Co-Chairman, Appalachian Regional Commission, 1666 Connecticut Avenue, N.W., Washington, D.C. 20235 967-4103.

## DEPARTMENT OF THE ARMY (CORPS OF ENGINEERS)

Executive Director of Civil Works, Office of the Chief of Engineers, U.S. Army Corps of Engineers, Washington, D.C. 20314 693-7168.

## ATOMIC ENERGY COMMISSION

For nonregulatory matters: Office of Assistant General Manager for Biomedical and Environmental Research and Safety Programs, Atomic Energy Commission, Washington, D.C. 20345 973-3208.

For regulatory matters: Office of the Assistant Director for Environmental Projects, Atomic Energy Commission, Washington, D.C. 20545 973-7531.

## DEPARTMENT OF COMMERCE

Office of the Deputy Assistant Secretary for Environmental Affairs, U.S. Department of Commerce, Washington, D.C. 20230 967-4335.

## DEPARTMENT OF DEFENSE

Office of the Assistant Secretary for Defense (Health and Environment), U.S. Department of Defense, Room 3E172, The Pentagon, Washington, D.C. 20301 697-2111.

## DELAWARE RIVER BASIN COMMISSION

Office of the Secretary, Delaware River Basin Commission, Post Office Box 360, Trenton, N.J. 08603 (609) 883-9500.

## FEDERAL POWER COMMISSION

Commission's Advisor on Environmental Quality, Federal Power Commission, 825 N. Capitol Street, N.E. Washington, D.C. 20426 386-6084.

## GENERAL SERVICES ADMINISTRATION

Office of Environmental Affairs, Office of the Deputy Administrator for Special Projects, General Services Administration, Washington, D.C. 20405 343-4161.

## GREAT LAKES BASIN COMMISSION

Office of the Chairman, Great Lakes Basin Commission, 3475 Plymouth Road, P.O. Box 999, Ann Arbor, Michigan 48105 (313) 769-7431.

DEPARTMENT OF HEALTH, EDUCATION  
AND WELFARE<sup>3</sup>

For information with respect to HEW actions occurring within the jurisdiction of the Departments' Regional Directors, contact the appropriate Regional Environmental Officer:

Office of Environmental Affairs, Office of the Assistant Secretary for Administration and Management, Department of Health, Education and Welfare, Washington, D.C. 20202 963-4456.

Region I, Regional Environmental Officer, U.S. Department of Health, Education and Welfare, Room 2007B, John F. Kennedy Center, Boston, Massachusetts 02203 (617) 223-6837.

Region II, Regional Environmental Officer, U.S. Department of Health, Education and Welfare, Federal Building, 26 Federal Plaza, New York, New York 10007 (212) 264-1308.

Region III, Regional Environmental Officer, U.S. Department of Health, Education and Welfare, P.O. Box 13716, Philadelphia, Pennsylvania 19101 (215) 597-6498.

Region IV, Regional Environmental Officer, U.S. Department of Health, Education and Welfare, Room 404, 50 Seventh Street, N.E. Atlanta, Georgia 30323 (404) 526-5817.

Region V, Regional Environmental Officer, U.S. Department of Health, Education and Welfare, 433 West Van Buren Street, Chicago, Illinois 60607 (312) 353-1644.

DEPARTMENT OF HOUSING AND URBAN  
DEVELOPMENT<sup>4</sup>

Regional Administrator II, Environmental Clearance Officer, U.S. Department of Housing and Urban Development, 26 Federal Plaza, New York, New York 10007 (212) 264-8068.

<sup>3</sup>Contact the Office of Environment Affairs for information on HEW's environmental statements concerning legislation, regulations, national program proposals or other major policy issues, and for all requests for HEW comment on impact statements of other agencies.

<sup>4</sup>Contact the Director with regard to environmental impacts of legislation, policy statements, program regulations and procedures, and precedent-making project decisions. For all other HUD consultation, contact the HUD Regional Administrator in whose jurisdiction the project lies, as follows:

Regional Administrator I, Environmental Clearance Officer, U.S. Department of Housing and Urban Develop-

Regional Administrator III, Environmental Clearance Officer, U.S. Department of Housing and Urban Development, Curtis Building, Sixth and Walnut Street, Philadelphia, Pennsylvania 19106 (215) 597-2560.

Regional Administrator IV, Environmental Clearance Officer, U.S. Department of Housing and Urban Development, Peachtree-Seventh Building, Atlanta, Georgia 30323 (404) 526-5585.

Regional Administrator V, Environmental Clearance Officer, U.S. Department of Housing and Urban Development, 360 North Michigan Avenue, Chicago, Illinois 60601 (312) 353-5680.

Director, Office of Community and Environmental Standards, Department of Housing and Urban Development, Room 7206, Washington, D.C. 20410 755-5980.

#### DEPARTMENT OF THE INTERIOR <sup>5</sup>

Director, Office of Environmental Project Review, Department of the Interior, Interior Building, Washington, D.C. 20240 343-3891.

#### INTERSTATE COMMERCE COMMISSION

Office of Proceedings, Interstate Commerce Commission, Washington, D.C. 20423 343-6167.

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ment, Room 405, John F. Kennedy Federal Building, Boston, Mass. 02203 (617) 223-4066.

Region VI, Regional Environmental Officer, U.S. Department of Health, Education and Welfare, 1114 Commerce Street, Dallas, Texas 75202 (214) 749-2236.

Region VII, Regional Environmental Officer, U.S. Department of Health, Education and Welfare, 601 East 12th Street, Kansas City, Missouri 64106 (816) 374-3584.

Region VIII, Regional Environmental Officer, U.S. Department of Health, Education and Welfare, 9017 Federal Building, 19th and Stout Streets, Denver, Colorado 80202 (303) 837-4178.

Region IX, Regional Environmental Officer, U.S. Department of Health, Education and Welfare, 50 Fulton Street, San Francisco, California 94102 (415) 556-1970.

Region X, Regional Environmental Officer, U.S. Department of Health, Education and Welfare, Arcade Plaza Building, 1321 Second Street, Seattle, Washington 98101 (206) 442-0490.

<sup>5</sup> Requests for comments or information from individual units of the Department of the Interior should be sent to the Office of Environmental Project Review at the address given above.

#### DEPARTMENT OF LABOR

Assistant Secretary for Occupational Safety and Health, Department of Labor, Washington, D.C. 20210 961-3405.

#### MISSOURI RIVER BASINS COMMISSION

Office of the Chairman, Missouri River Basins Commission, 10050 Regency Circle, Omaha, Nebraska 68114 (402) 397-5714.

#### NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Office of the Comptroller, National Aeronautics and Space Administration, Washington, D.C. 20546 755-8440.

#### NATIONAL CAPITAL PLANNING COMMISSION

Office of Environmental Affairs, Office of the Executive Director, National Capital Planning Commission, Washington, D.C. 20576 382-7200.

#### NATIONAL ENDOWMENT FOR THE ARTS

Office of Architecture and Environmental Arts Program, National Endowment for the Arts, Washington, D.C. 20506 382-5765.

#### NEW ENGLAND RIVER BASINS COMMISSION

Office of the Chairman, New England River Basins Commission, 55 Court Street, Boston, Mass. 02108 (617) 223-6244.

Regional Administrator VI, Environmental Clearance Officer, U.S. Department of Housing and Urban Development, Federal Office Building, 819 Taylor Street, Fort Worth, Texas 76102 (817) 334-2867.

Regional Administrator VII, Environmental Clearance Officer, U.S. Department of Housing and Urban Development, 911 Walnut Street, Kansas City, Missouri 64106 (816) 374-2661.

Regional Administrator VIII, Environmental Clearance Officer, U.S. Department of Housing and Urban Development, Samsonite Building, 1051 South Broadway, Denver, Colorado 80209 (303) 837-4061.

Regional Administrator IX, Environmental Clearance Officer, U.S. Department of Housing and Urban Development, 450 Golden Gate Avenue, Post Office Box 36003, San Francisco, California 94102 (415) 556-4752.

Regional Administrator X, Environmental Clearance Officer, U.S. Department of Housing and Urban Development, Room 226, Arcade Plaza Building, Seattle, Washington 98101 (206) 583-5415.

OFFICE OF ECONOMIC OPPORTUNITY

Office of the Director, Office of Economic Opportunity, 1200 19th Street, N.W., Washington, D.C. 20506 254-6000.

OHIO RIVER BASIN COMMISSION

Office of the Chairman, Ohio River Basin Commission, 36 East 4th Street, Suite 208-20, Cincinnati, Ohio 45202 (513) 684-3831.

PACIFIC NORTHWEST RIVER BASINS COMMISSION

Office of the Chairman, Pacific Northwest River Basins Commission, 1 Columbia River, Vancouver, Washington 98660 (206) 695-3606.

SOURIS-RED-RAINY RIVER BASINS COMMISSION

Office of the Chairman, Souris-Red-Rainy River Basins Commission, Suite 6, Professional Building, Holiday Mall, Moorhead, Minnesota 56560 (701) 237-5227.

DEPARTMENT OF STATE

Office of the Special Assistant to the Secretary for Environmental Affairs, Department of State, Washington, D.C. 20520 632-7964.

SUSQUEHANNA RIVER BASIN COMMISSION

Office of the Executive Director, Susquehanna River Basin Commission, 5012 Lenker Street, Mechanicsburg, Pa. 17055 (717) 737-0501.

TENNESSEE VALLEY AUTHORITY

Office of the Director of Environmental Research and Development, Tennessee Valley Authority, 720 Edney Building, Chattanooga, Tennessee 37401 (615) 755-2002.

DEPARTMENT OF TRANSPORTATION<sup>6</sup>

Director, Office of Environmental Quality, Office of the Assistant Secretary for Environment,

Safety, and Consumer Affairs, Department of Transportation, Washington, D.C. 20590 426-4357.

For information regarding the Department of Transportation's other environmental statements, contact the national office for the appropriate administration:

*U.S. Coast Guard*

Office of Marine Environment and Systems, U.S. Coast Guard, 400 7th Street, S.W., Washington, D.C. 20590 426-2007.

*Federal Aviation Administration*

Office of Environmental Quality, Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591 426-8406.

*Federal Highway Administration*

Office of Environmental Policy, Federal Highway Administration, 400 7th Street, S.W., Washington, D.C. 20590 426-0351.

*Federal Railroad Administration*

Office of Policy and Plans, Federal Railroad Administration, 400 7th Street, S.W., Washington, D.C. 20590 426-1567.

*Urban Mass Transportation Administration*

Office of Program Operations, Urban Mass Transportation Administration, 400 7th Street, S.W., Washington, D.C. 20590 426-4020.

For other administration's not listed above, contact the Office of Environmental Quality, Department of Transportation, at the address given above.

For comments on other agencies' environmental statements, contact the appropriate administration's regional office. If more than one administration within the Department of Transportation is to be requested to comment, contact the Secretarial Representative in the appropriate Regional Office for coordination of the Department's comments:

SECRETARIAL REPRESENTATIVE

Region I Secretarial Representative, U.S. Department of Transportation, Transportation Systems Center, 55 Broadway, Cambridge, Massachusetts 02142 (617) 494-2709.

<sup>6</sup> Contact the Office of Environmental Quality, Department of Transportation, for information on DOT's environmental statements concerning legislation, regulations, national program proposals, or other major policy issues.

Region II Secretarial Representative, U.S. Department of Transportation, 26 Federal Plaza, Room 1811, New York, New York 10007 (212) 264-2672.

Region III Secretarial Representative, U.S. Department of Transportation, Mall Building, Suite 1214, 325 Chestnut Street, Philadelphia, Pennsylvania 19106 (215) 597-0407.

Region IV Secretarial Representative, U.S. Department of Transportation, Suite 515, 1720 Peachtree Rd., N.W., Atlanta, Georgia 30309 (404) 526-3738.

Region V Secretarial Representative, U.S. Department of Transportation, 17th Floor, 300 S. Wacker Drive, Chicago, Illinois 60606 (312) 353-4000.

Region VI Secretarial Representative, U.S. Department of Transportation, 9-C-18 Federal Center, 1100 Commerce Street, Dallas, Texas 75202 (214) 749-1851.

Region VII Secretarial Representative, U.S. Department of Transportation, 601 E. 12th Street, Room 634, Kansas City, Missouri 64106 (816) 374-2761.

Region VIII Secretarial Representative, U.S. Department of Transportation, Prudential Plaza, Suite 1822, 1050 17th Street, Denver, Colorado 80225 (303) 837-3242.

Region IX Secretarial Representative, U.S. Department of Transportation, 450 Golden Gate Avenue, Box 36133, San Francisco, California 94102 (415) 556-5961.

Region X Secretarial Representative, U.S. Department of Transportation, 1321 Second Avenue, Room 507, Seattle, Washington 98101 (206) 442-0590.

#### FEDERAL AVIATION ADMINISTRATION

New England Region, Office of the Regional Director, Federal Aviation Administration, 154 Middlesex Street, Burlington, Massachusetts 01803 (617) 272-2350.

Eastern Region, Office of the Regional Director, Federal Aviation Administration, Federal Building, JFK International Airport, Jamaica, New York 11430 (212) 995-3333.

Southern Region, Office of the Regional Director, Federal Aviation Administration, P.O. Box 20636, Atlanta, Georgia 30320 (404) 526-7222.

Great Lakes Region, Office of the Regional Director, Federal Aviation Administration, 2300 East Devon, Des Plaines, Illinois 60018 (312) 694-4500.

Southwest Region, Office of the Regional Director, Federal Aviation Administration, P.O. Box 1689, Fort Worth, Texas 76101 (817) 624-4911.

Central Region, Office of the Regional Director, Federal Aviation Administration, 601 E. 12th Street, Kansas City, Missouri 64106 (816) 374-5626.

Rocky Mountain Region, Office of the Regional Director, Federal Aviation Administration, Park Hill Station, P.O. Box 7213, Denver, Colorado 80207 (303) 837-3646.

Western Region, Office of the Regional Director, Federal Aviation Administration, P.O. Box 92007, World Way Postal Center, Los Angeles, California 90009 (213) 536-6427.

Northwest Region, Office of the Regional Director, Federal Aviation Administration, FAA Building, Boeing Field, Seattle, Washington 98108 (206) 767-2780.

#### FEDERAL HIGHWAY ADMINISTRATION

Region 1, Regional Administrator, Federal Highway Administration, 4 Normanskill Boulevard, Delmar, New York 12054 (518) 472-6476.

Region 3, Regional Administrator, Federal Highway Administration, Room 1621, George H. Fallon Federal Office Building, 31 Hopkins Plaza, Baltimore, Maryland 21201 (301) 962-2361.

Region 4, Regional Administrator, Federal Highway Administration, Suite 200, 1720 Peachtree Road, N.W., Atlanta, Georgia 30309 (404) 526-5078.

Region 5, Regional Administrator, Federal Highway Administration, Dixie Highway, Homewood, Illinois 604030 (312) 799-6300.

Region 6, Regional Administrator, Federal Highway Administration, 819 Taylor Street, Fort Worth, Texas 76102 (817) 334-3232.

Region 7, Regional Administrator, Federal Highway Administration, P.O. Box 7186, Country Club Station, Kansas City, Missouri 64113 (816) 361-7563.

Region 8, Regional Administrator, Federal Highway Administration, Room 242, Building 40, Denver Federal Center, Denver, Colorado 80225.

Region 9, Regional Administrator, Federal Highway Administration, 450 Golden Gate Avenue, Box 36096, San Francisco, California 94102 (415) 556-2895.

Region 10, Regional Administrator, Federal Highway Administration, Room 412, Mohawk Building, 222 S.W. Morrison Street, Portland, Oregon 97204 (503) 221-2065.

#### URBAN MASS TRANSPORTATION ADMINISTRATION

Region I, Office of the UMTA Representative, Urban Mass Transportation Administration, Transportation Systems Center, Technology Building, Room 277, 55 Broadway, Boston, Massachusetts 02142 (617) 494-2055.

Region II, Office of the UMTA Representative, Urban Mass Transportation Administration, 26 Federal Plaza, Suite 1809, New York, New York 10007 (212) 264-8162.

Region III, Office of the UMTA Representative, Urban Mass Transportation Administration, Mall Building, Suite 1214, 325 Chestnut Street, Philadelphia, Pennsylvania 19106 (215) 597-0407.

Region IV, Office of the UMTA Representative, Urban Mass Transportation Administration, 1720 Peachtree Road, Northwest, Suite 501, Atlanta, Georgia 30309 (404) 526-3948.

Region V, Office of the UMTA Representative, Urban Mass Transportation Administration, 300 South Wacker Drive, Suite 700, Chicago, Illinois 60606 (312) 353-6005.

Region VI, Office of the UMTA Representative, Urban Mass Transportation Administration, Federal Center, Suite 9E24, 1100 Commerce Street, Dallas, Texas 75202 (214) 749-7322.

Region VII, Office of the UMTA Representative, Urban Mass Transportation Administration, c/o FAA Management Systems Division, Room 1564D, 601 East 12th Street, Kansas City, Missouri 64106 (816) 374-5567.

Region VIII, Office of the UMTA Representative, Urban Mass Transportation Administration, Prudential Plaza, Suite 1822, 1050 17th Street, Denver, Colorado 80202 (303) 837-3242.

Region IX, Office of the UMTA Representative, Urban Mass Transportation Administration, 450 Golden Gate Avenue, Box 36125, San Francisco, California 94102 (415) 556-2884.

Region X, Office of the UMTA Representative, Urban Mass Transportation Administration, 1321 Second Avenue, Suite 5079, Seattle, Washington (206) 442-0590.

#### DEPARTMENT OF THE TREASURY

Office of Assistant Secretary for Administration, Department of the Treasury, Washington, D.C. 20220 964-5391.

#### UPPER MISSISSIPPI RIVER BASIN COMMISSION

Office of the Chairman, Upper Mississippi River Basin Commission, Federal Office Building, Fort Snelling, Twin Cities, Minnesota 55111 (612) 725-4690.

#### WATER RESOURCES COUNCIL

Office of the Associate Director, Water Resources Council, 2120 L Street, N.W., Suite 800, Washington, D.C. 20037 254-6442.

## ATTACHMENT 4

### STATE AND LOCAL AGENCY REVIEW OF IMPACT STATEMENTS

1. OBM Revised Circular No. A-95 through its system of clearinghouses provides a means for securing the views of State and local environmental agencies, which can assist in the preparation of impact statements. Under A-95, review of the proposed project in the case of federally assisted projects (Part I of A-95) generally takes place prior to the preparation of the impact statement. Therefore, comments on the environmental effects of the proposed project that are secured during this stage of the A-95 process represent inputs to the environmental impact statement.

2. In the case of direct Federal development (Part II of A-95), Federal agencies are required to consult with clearinghouse at the earliest practicable time in the planning of the project or activity. Where such consultation occurs prior to completion of the draft impact statement, comments relating to the environmental effects of the proposed action would also represent inputs to the environmental impact statement.

3. In either case, whatever comments are made on environmental effects of proposed Federal or federally assisted projects by clearinghouses, or by State and local environmental agencies through clearinghouses, in the course of the A-95

review should be attached to the draft impact statement when it is circulated for review. Copies of the statement should be sent to the agencies making such comments. Whether those agencies then elect to comment again on the basis of the draft impact statement is a matter to be left to the discretion of the commenting agency depending on its resources, the significance of the project and the extent to which its earlier comments were considered in preparing the draft statement.

4. The clearinghouses may also be used, by mutual agreement, for securing reviews of the draft environmental impact statement. However, the Federal agency may wish to deal directly with appropriate State or local agencies in the review of impact statements because the clearinghouses may be unwilling or unable to handle this phase of the process. In some cases, the Governor may have designated a specific agency, other than the clearinghouse, for securing reviews of impact statements. In any case, the clearinghouses should be sent copies of the impact statement.

5. To aid clearinghouses in coordinating State and local comments, draft statements should include copies of State and local agency comments made earlier under the A-95 process and should indicate on the summary sheet those other agencies from which comments have been requested, as specified in Attachment 1.

**40 F.R. 52395**  
**November 10, 1975**

**PREAMBLE TO PART 551—PROCEDURAL RULES**  
**(Docket No. 4)**

The purpose of this rule-making action is to adopt new Part 351—General Procedural Rules.

The new part will eventually contain the rules on those matters that are common to all procedures. At this time only the rules governing submittals in writing, and governing service of process on designated agents of foreign manufacturers, are being adopted.

The rules governing submittals in writing are those considered necessary for the efficient handling of business. These rules apply, of course, to written comments on notices of proposed rule-making. Designation of agents by foreign manufacturers to receive service of process is required by section 110(e) of the National Traffic and Motor Vehicle Safety Act of 1966, and the rules implement this provision. Both groups of rules are self-explanatory. Since these rules are procedural in character, notice of proposed rule-making is not required (5 U.S.C. 553(b)).

In consideration of the foregoing, Chapter II of Title 49 of the Code of Federal Regulations is amended by inserting, in Subchapter B, a new part as set forth below. This action is taken under the authority of sections 110(e) and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (80 Stat. 718); 23 U.S.C. section 315 and chapter 4; and the delegation of authority of October 20, 1966 (31 F.R. 13952).

These rules become effective December 20, 1966.

Issued in Washington, D.C., on December 15, 1966.

**Alan S. Boyd,**  
**Under Secretary of Commerce**  
**for Transportation**

**SUBPART A—GENERAL**

Sec.

**351.1** Scope.

**SUBPART B—[RESERVED]**

**351.31** Form of communications.

**351.33** Address of communications.

**351.35** Subscription of communications.

**351.37** Language of communications.

**SUBPART D—SERVICE OF PROCESS; AGENTS**

**351.41** [Reserved]

**351.43** [Reserved]

**351.45** Service of process on foreign manufacturers and importers

**AUTHORITY:** The provisions of this Part 351 issued under secs. 110(e), 119, 80 Stat. 719, 728; 15 U.S.C. 1399, 1407, 23 U.S.C. 315, 401-404; Delegation of Authority, 31 F.R. 13952, 32 F.R. 5606.

**31 F.R. 16267**  
**December 20, 1966**



## PREAMBLE TO AMENDMENT TO PART 551—PROCEDURAL RULES

Parts 501, 551, and 553 of Title 49, Code of Federal Regulations, currently detail the delegated powers, general procedures, and rulemaking procedures utilized by the National Highway Traffic Safety Administration (NHTSA) to implement the National Traffic and Motor Vehicle Safety Act of 1966, Public Law 89-563. The Motor Vehicle Information and Cost Savings Act, Public Law 92-513, vests additional authority in the NHTSA. This amendment extends the applicability of Parts 501, 551, and 553 to the Cost Savings Act to establish uniform rulemaking procedures for both Acts.

Accordingly, amendments are made to 49 CFR, Part 501, "Organization and delegation of powers and duties", Part 551, "Procedural rules", and Part 553, "Rulemaking procedures: motor vehicle safety standards". . . .

Since this amendment relates to NHTSA organization, procedures, and practices, it is

found that notice and public procedure thereon are unnecessary.

Effective date: July 27, 1973. Because this notice is only an extension of existing procedures to new areas of jurisdiction, it is found that an immediate effective date is in the public interest.

(Secs. 9, Pub. L. 89-670, 80 Stat. 944, 49 U.S.C. 1657; 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; 102, 105, 201, 205, 302, and 408, Pub. L. 92-513, 86 Stat. 947, 15 U.S.C. 1912, 1915, 1941, 1945, 1962, and 1988; delegation of authority at 38 FR 12147).

Issued on July 23, 1973.

James E. Wilson  
Associate Administrator  
Traffic Safety Programs

**38 F.R. 20086**

**July 27, 1973**



## PART 551—PROCEDURAL RULES

### SUBPART A—GENERAL

#### § 551.1. Scope.

This part contains rules of procedure generally applicable to the transaction of official business under the National Traffic and Motor Vehicle Safety Act of 1966, the Motor Vehicle Information and Cost Savings Act, and the Highway Safety Act of 1966. These rules apply in addition to the rules governing specific proceedings. In case of inconsistency with these general rules, the specific rules prevail.

### SUBPART B—[RESERVED]

### SUBPART C—SUBMITTALS IN WRITING

#### § 551.31 Form of Communications.

Any communication in writing relating to official business (including formal documents) shall be on opaque and durable paper not larger than 9 by 14 inches in size. Tables, charts, or originals of other documents that are attached to communications shall be folded to this size, if possible. The left margin of communications shall be at least 1½ inches wide, and if a communication is bound, it shall be bound on the left side. All copies submitted shall be legible.

#### § 551.33 [Address of communications.

Unless otherwise specified, communications shall be addressed to the Administrator, National Highway Traffic Safety Administration, U.S. Department of Transportation, 400 Seventh Street, S.W., Washington, D.C. 20590. Communications may not be addressed to a staff member's private address (36 F.R. 1147—January 23, 1971. Effective: 1-27-71)]

#### § 551.35 Subscription of communications.

Each communication shall be signed in ink and shall disclose the full legal name and address of the person signing it and, if he is an agent, of his principal.

#### § 551.37 Language of communications.

Communications and attachments thereto shall be in English. Any matter written in a foreign language will be considered only if accompanied by a translation into English. A translation shall bear a certificate by the translator certifying that he is qualified to make the translation; that the translation is complete except as otherwise clearly indicated; and that it is accurate to the best of the translator's knowledge and belief. The translator shall sign the certificate in ink and state his full, legal name, occupation and address.

### SUBPART D—SERVICE OF PROCESS; AGENTS

#### § 551.41 [Reserved]

#### § 551.43 [Reserved]

#### § 551.45 Service of process on foreign manufacturers and importers.

(a) *Designation of agent for service.* Any manufacturer, assembler or importer of motor vehicles or motor vehicle equipment (hereinafter called manufacturer) before offering a motor vehicle or item of motor vehicle equipment for importation into the United States, shall designate a permanent resident of the United States as his agent upon whom service of all processes, notices, orders, decisions, and requirements may be made for him and on his behalf as provided in section 110(e) of the National Traffic and Motor Vehicle Safety Act of 1966 (80 Stat. 718) and in this section. The agent may be an individual, a firm, or a domestic corporation. Any number of manufacturers may designate the same person as agent.

(b) *Form and contents of designation.* [The designation shall be addressed to the Administrator, National Highway Traffic Safety Administration, U.S. Department of Transportation, 400 Seventh Street, S.W., Washington, D.C. 20590. (36 F.R. 1147—January 23, 1971. Ef-

fective: 1-27-71) It shall be in writing and dated; all signatures shall be in ink. The designation shall be made in legal form required to make it valid, and binding on the laws, or other requirements governing the making of the designation by the manufacturer at the place and time where it is made, and the person or persons signing the designation shall certify that it is so made. The designation shall disclose the full legal name, principal place of business, and mailing address of the manufacturer. If any of the products of the manufacturer do not bear his legal name, the marks, trade names, or other designations of origin which these products bear shall be stated in the designation. The designation of agent shall provide that it remains in effect until withdrawn or replaced by the manufacturer. The designation shall bear a declaration of acceptance duly signed by the designated agent. The full legal name and mailing address of the agent shall be

stated. Designations are binding on the manufacturer even when not in compliance with all requirements of this section until rejected by the Administrator. The designated agent may not assign performance of his functions under the designation to another person.

(c) *Method of service.* Service of any process, notice, order, requirement, or decision specified in section 110(e) of the National Traffic and Motor Vehicle Safety Act of 1966 may be made by registered or certified mail addressed to the agent, with return receipt requested, or in any other manner authorized by law. If service cannot be effected because the agent has died (or, if a firm or a corporation ceased to exist) or moved, or otherwise does not receive correctly addressed mail, service may be made by posting as provided in section 110(e).

**31 F.R. 16267-8**  
**December 20, 1966**

## PREAMBLE TO PART 552—PETITIONS FOR RULEMAKING, DEFECT, AND NONCOMPLIANCE ORDERS

(Docket No. 75-12; Notice 2)

This notice establishes a new regulation specifying the requirements for submission of petitions for rulemaking, and petitions for the commencement of defect or non-compliance proceedings in accordance with section 124 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1410a. It also describes the procedures the NHTSA will follow in acting upon such petitions.

The notice of proposed rulemaking on which this issuance is based was issued on May 16, 1975 (40 CFR 21486), in response to which eight comments were received. After careful consideration of those comments, the NHTSA has determined that no substantial change from the proposal is called for in the language of the rule.

Most of the comments received in response to the proposed resolution supported the establishment of some kind of regulation with respect to petitions for rulemaking. American Motors supported the proposal without qualification, while the other commenters suggested changes of varying import.

The Center for Auto Safety argued that the proposed rule was too narrow, as it did not deal with petitions to close defect investigations. Section 124 of the Act, upon which Part 552 is based, establishes formal requirements for petitions in the major areas of agency activity under the Act: petitions to "commence proceedings" concerning the issuance, amendment, or revocation of a motor vehicle safety standard, and petitions to "commence proceedings" concerning the issuance of an order with respect to the failure to comply with a safety standard or the existence of a safety-related defect. These are in fact the main areas in which petitions have been received by the agency in the past. Section 124 indicates an intent of Congress to provide,

and at the same time to limit, formal "petition treatment" to these areas. This treatment includes a statutory deadline for action, and Federal Register publication of reasons for denial. A corollary of this Congressional intent is that an informal response by the agency to other types of requests for action is satisfactory. Accordingly, such other requests will not be treated as petitions, but will be handled informally (as in the past) under existing correspondence or other appropriate NHTSA procedures.

The Center for Auto Safety also urged that, upon denial of a petition, the NHTSA should be required to provide the reasons for the denial in specific detail. This suggestion is outside the intent of the statutory provision, and without merit. A full discussion of the agency's reasons for denial of a petition is provided to the petitioner, and copies of such a denial letter are (except for confidential matter) generally available to any person upon request. This agency does not find any intent of Congress to require the full text of denial letters to be printed in the Federal Register. The NHTSA practice of publishing a summary of its reasons for a denial appears to satisfy both the letter and the spirit of section 124. The reason for the provision is to make the agency publicly accountable and "responsible" (from the title of the section) for its negative decisions, as it naturally is for its positive ones. A person who, put on notice by the Federal Register publication, wishes to delve more deeply into the background of the matter may readily do so by requesting further information from the agency.

General Motors objected to the use of the "reasonable possibility" standard in determining whether to grant or deny a petition because it would allow for the granting of virtually any

petition. The NHTSA does not agree. It should be remembered that the grant of a petition under this part leads only to the commencement of agency action to gather information necessary to make a decision. The use of the modifier "reasonable" limits the discretion of the Administrator to grant only a petition for an order or rule that has a reasonable chance of being issued, not a petition for any order or rule that may conceivably be issued. The substitution of the term "reasonable probability," as urged by GM, would tend to transform a threshold decision as to whether or not the rule or order *might* issue into a determination of whether or not it *should* issue. Such a result would dilute the intent of both section 124 and Part 552 to provide means for interested parties, without access to complete data, to seek remedial action regarding what they consider to be defective or unsafe characteristics of motor vehicles.

GM also urged that a petitioner be required to verify the facts alleged in the petition before any information requests are made to the manufacturer. Such a requirement would preclude the granting of a petition submitted by an individual or organization with limited resources. The technical review conducted by the Associate Administrator necessarily includes an analysis of the facts alleged in the petition. If he determines that the facts need verification by the petitioner, he has the discretion to request that the petitioner submit additional information. However, to require such information as a condition precedent to granting the petition would not only unduly burden the petitioner, but also would exceed the statutory requirement that the petition merely set forth the facts which it is claimed establish the necessity of an order, not that it prove those facts.

The Recreation Vehicle Industry Association (RVIA) objected to the provision denying cross examination of witnesses at hearings held on petitions under Part 552. It is well established that the NHTSA may hold informal hearings under the Traffic Safety Act, in cases such as *Automotive Parts & Accessories Ass'n, Inc. v. Boyd*, 407 F.2d 330, 334 (D.C. Cir. 1968). The purpose of an informal hearing is to permit the NHTSA to determine whether or not a petitioner

has a valid complaint or request for rulemaking. This purpose is best served by allowing both sides to present information and arguments without the necessity for conforming to strict evidentiary rules. In addition, the drafters of section 124 intended to encourage the free use of the petition procedure in alerting the NHTSA to vehicle safety problems. The possibility of having to submit to rigorous cross-examination might deter many potential petitioners from utilizing this procedure. Accordingly, the provision allowing for an informal hearing has been retained intact.

The RVIA also argued that the manufacturer be allowed to respond to the petition before the Administrator decided whether to grant or deny it. Such a proposal misapprehends the purpose of the petition and ignores the opportunities a manufacturer has to respond to adverse information submitted in a petition. If the NHTSA denies the petition, there is no need for response as there is no action adverse to the manufacturer. If the petition is granted, the applicable rulemaking and investigatory procedures are commenced, with full opportunity for the manufacturer to present data and arguments against the proposed rule or order. As noted above, the purpose of the technical review is to facilitate a threshold decision as to whether an order or rule might issue, not whether it will. Thus it is not necessary to consider the comments of the manufacturer before deciding whether to grant or deny.

The proposed time for Federal Register publication of notice of a denial of a petition was 30 days. In order to allow time to prepare a monthly publication of a notice of denials, in the interest of efficiency and conservation of Federal Register space, this period is set at 45 days.

In light of the foregoing, Title 49, Code of Federal Regulation, is amended by the addition of a new Part 552, *Petitions for Rulemaking, Defect, and Noncompliance Orders. . . .*

*Effective date:* September 4, 1975.

Issued on September 4, 1975.

James B. Gregory  
Administrator  
**40 F.R. 42013**  
**September 10, 1975**

## PART 552—PETITIONS FOR RULEMAKING, DEFECT, AND NONCOMPLIANCE ORDERS

*Sec.*

**552.1 Scope.**

**552.2 Purpose.**

**552.3 General.**

**552.4 Requirements for Petition.**

**552.5 Improperly filed petitions.**

**552.6 Technical review.**

**552.7 Public hearing.**

**552.8 Determination whether to commence a proceeding.**

**552.9 Grant of petition.**

**552.10 Denial of petition.**

**AUTHORITY:** Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, (15 U.S.C. 1392, 1407); Sec. 124, 152 Pub. L. 93-492, 88 Stat. 1470, (15 U.S.C. 1410a, 1412); delegation of authority at 49 CFR 1.51.

**§ 552.1 Scope.** This part establishes procedures for the submission and disposition of petitions filed by interested persons pursuant to the National Traffic and Motor Vehicle Safety Act and the Motor Vehicle Information and Cost Savings Act, to initiate rulemaking or to make a determination that a motor vehicle or item of replacement equipment does not comply with an applicable Federal motor vehicle safety standard or contains a defect which relates to motor vehicle safety.

**§ 552.2 Purpose.** The purpose of this part is to enable the National Highway Traffic Safety Administration to identify and respond on a timely basis to petitions for rulemaking or defect or noncompliance determinations, and to inform the public of the procedures following in response to such petitions.

**§ 552.3 General.** Any interested person may file with the Administrator a petition requesting him (1) to commence a proceeding respecting the issuance, amendment, or revocation of a motor vehicle safety standard, or (2) to commence a proceeding to determine whether to issue an order concerning the notification and remedy of a failure of a motor vehicle or item of replacement equipment to comply with an applicable motor vehicle safety standard or a defect in such vehicle or equipment that relates to motor vehicle safety.

**§ 552.4 Requirements for petition.** A petition filed under this part should be addressed and submitted to: Administrator, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590. Each petition filed under this part must—

- (a) Be written in the English language;
- (b) Have, preceding its text, a heading that includes the word "Petition";
- (c) Set forth facts which it is claimed establish that an order is necessary;
- (d) Set forth a brief description of the substance of the order which it is claimed should be issued; and
- (e) Contain the name and address of the petitioner.

**§ 552.5 Improperly filed petitions.** (a) A petition that is not addressed as specified in § 552.4, but that meets the other requirements of that section, will be treated as a properly filed petition, received as of the time it is discovered and identified.

(b) A document that fails to conform to one or more of the requirements of 552.4(a) through (e) will not be treated as a petition under this part. Such a document will be treated according

to the existing correspondence or other appropriate procedures of the NHTSA, and any suggestions contained in it will be considered at the discretion of the Administrator or his delegate.

**§ 552.6 Technical review.** The appropriate Associate Administrator conducts a technical review of the petition, to determine whether there is a reasonable possibility that the requested order will be issued at the conclusion of the appropriate proceeding. The technical review may consist of an analysis of the material submitted, together with information already in the possession of the agency, or it may also include the collection of additional information, or a public meeting in accordance with § 552.7.

**§ 552.7 Public meeting.** If the Associate Administrator decides that a public meeting on the subject of the petition would contribute to the determination whether to commence a proceeding, he issues a notice of public meeting for publication in the Federal Register to advise interested persons of the time, place, and subject matter of the public meeting and invite their participation. Interested persons may submit their views and evidence through oral or written presentations, or both. There is no cross examination of witnesses. A transcript of the meeting is kept and exhibits may be accepted as part of the transcript. Sections 556 and 557 of Title 5, United States Code, do not apply to meetings held under this part. The Chief Counsel designates a member of his staff to serve as legal officer at the meeting.

**§ 552.8 Determination whether to commence a proceeding.** At the conclusion of the technical review, the Administrator or his delegate deter-

mines whether there is a reasonable possibility that the order requested in the petition will be issued at the conclusion of the appropriate proceeding. If such a reasonable possibility is found, the petition is granted. If it is not found, the petition is denied. In either event, the petitioner is notified of the grant or denial not more than 120 days after receipt of the petition by the NHTSA.

**§ 552.9 Grant of petition.** (a) If a petition for rulemaking with respect to a motor vehicle safety standard is granted, a rulemaking proceeding is promptly commenced in accordance with applicable NHTSA and statutory procedures. The granting of such a petition and the commencement of a rulemaking proceeding does not signify, however, that the rule in question will be issued. A decision as to the issuance of the rule is made on the basis of all available information developed in the course of the rulemaking proceeding, in accordance with statutory criteria.

(b) If a petition with respect to a noncompliance or a defect is granted, a proceeding to determine the existence of the noncompliance or defect is promptly commenced by the initiation of an investigation by the Office of Standards Enforcement or the Office of Defects Investigation, as appropriate.

**§ 552.10 Denial of petition.** If a petition is denied, a Federal Register notice of the denial is issued within 45 days of the denial, setting forth the reasons for denial of the petition.

40 F.R. 42013  
September 10, 1975

## PREAMBLE TO PART 553—RULEMAKING PROCEDURES: MOTOR VEHICLE SAFETY STANDARDS

This amendment revokes "Part 215—Rule-Making; Initial Safety Standards," 31 F.R. 13127, as amended, in 31 F.R. 15197, 32 F.R. 976, 32 F.R. 5832, and 32 F.R. 13000, and adds a new Part 353—"Rule-Making Procedures: Motor Vehicle Safety Standards" to the regulations of the Federal Highway Administration.

The purpose of this part is to describe the procedures applicable to the Federal Highway Administration in prescribing public rules for motor vehicle safety standards and to provide for appropriate participation by interested persons.

The new part provides for general notices of proposed rule making, to be published in the *Federal Register*, except in cases where the Administration finds that notice is impractical, unnecessary or contrary to the public interest. The new part also provides for petitions for extension of time to comment on notices of proposed rule making, petitions for reconsideration, and petitions for proposed rule making.

Sections 556 and 557 of Title 5, United States Code (formerly sections 7 and 8 of the Administrative Procedure Act), do not apply to rule making under this part. Consequently, hearings are not a required part of the rule-making procedure. However, hearings may be held, whenever it is considered necessary and desirable. Unless otherwise specified, any hearing held would be nonadversary, with no formal pleadings and no adverse party. A rule issued after such hearing would not necessarily be based exclusively on the record of the hearing.

All final rules will be published in the *Federal Register*, unless, in accordance with section 552(a) of Title 5, United States Code, actual and timely notice has been given to all persons subject to it.

Since this amendment relates to Federal Highway Administration organization, procedures,

and practices, notice and public procedure hereon is not necessary and it may be made effective in less than thirty (30) days after publication in the *Federal Register*.

This amendment is made under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1407), and the delegation of authority of October 14, 1967 (32 F.R. 14277).

In consideration of the foregoing, Title 49[23] of the Code of Federal Regulations is amended by deleting Part 215 and adding the following new Part 353—"Rule-Making Procedures: Motor Vehicle Safety Standards" effective November 17, 1967.

Issued in Washington, D.C., on November 9, 1967.

Lowell K. Bridwell,  
Federal Highway Administrator

### SUBPART A—GENERAL

- | Sec.  |                     |
|-------|---------------------|
| 353.1 | Applicability.      |
| 353.3 | Definitions.        |
| 353.5 | Regulatory dockets. |
| 353.7 | Records.            |

### SUBPART B—PROCEDURES FOR ADOPTION OF RULES UNDER SECTIONS 103 AND 109 OF THE ACT

- |        |  |
|--------|--|
| 353.11 | General.                                     |
| 353.13 | Initiation of rule making.                   |
| 353.15 | Contents of notices of proposed rule making. |
| 353.17 | Participation of interested persons.         |
| 353.19 | Petitions for extension of time to comment.  |
| 353.21 | Contents of written comments.                |
| 353.23 | Consideration of comments received.          |

Effective: November 17, 1967

- 353.25 Additional rule-making proceedings.
  - 353.27 Hearings.
  - 353.29 Adoption of final rules.
  - 353.31 Petitions for rule making.
  - 353.33 Processing of petitions.
  - 353.35 Petitions for reconsideration.
  - 353.37 Proceedings on petitions for reconsideration.
- 

AUTHORITY: The provisions of this Part 353 issued under secs. 103 and 119, 80 Stat. 728; 15 U.S.C. 1407; Delegation of Authority of Oct. 14, 1967 (32 F.R. 14277).

32 F.R. 15818  
November 17, 1967

## PREAMBLE TO AMENDMENT TO PART 553—RULEMAKING PROCEDURES: MOTOR VEHICLE SAFETY STANDARDS

### Effect of Petition for Reconsideration

Sections 553.35 and 553.37 of Title 49, Code of Federal Regulations, provide procedural rules for submission of, and action upon, petitions for reconsideration of rules issued under the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1381 et seq.). The purpose of this notice is to establish a new section in Part 553, to make clear the National Highway Safety Bureau's interpretation of the effect of the filing of a petition for reconsideration upon the running of the 60-day period for judicial review of orders issued under the Act (15 U.S.C. 1394).

The Bureau's position is that the 60-day period for judicial review is stayed by a timely petition for reconsideration of an order, and that the review period does not expire until 60 days after the Director's disposition of the petition by notice in the *Federal Register*. A party adversely affected by the order may, however, seek judicial review before the petition is disposed of.

The staying of the expiration of the review period while action is being taken on petitions for reconsideration is manifestly in the interest both of affected parties and orderly administration by the Bureau. Original orders are often amended on reconsideration. If the expiration of the judicial review period is not stayed, affected parties will be forced to file their appeal in court within 30 days after filing a petition for reconsideration, regarding an issue that may subsequently be mooted by Bureau action on the petition. There would be corresponding pressure on the Bureau to take hasty action on the petition. It appears that the intent of the statute would be best carried out by allowing an appeal

at any time between the original Bureau order and 60 days after final action on petitions.

The language of the statute can support this interpretation. The key language is that a person may seek judicial review "at any time prior to the 60th day after such order is issued" (15 U.S.C. 1394(a)(1)). Where a rule is promulgated, and then action is taken on a petition for reconsideration, actually both actions can reasonably be viewed as the issuance of an order. A party may accordingly wait until the last "order" in the rulemaking process to prepare his court action, with 60 days to do so. Alternatively, he may appeal immediately after the rule is first issued, as, for example, where the effective date is soon enough that he considers it important to obtain an immediate resolution of the issues.

In light of the foregoing, Part 553, Rulemaking Procedures: Motor Vehicle Safety Standards, of Title 49, Code of Federal Regulations is amended by adding a new § 553.39, Effect of petition for reconsideration on time for seeking judicial review, to read as set forth below. Since this rule is interpretative in nature, notice and public procedure thereon are unnecessary, and it is effective upon publication in the *Federal Register*.

Issued on December 17, 1970.

Douglas W. Toms,  
Director.

**December 19, 1970**  
**35 F.R. 19268**



**PREAMBLE TO AMENDMENT TO PART 553—RULEMAKING PROCEDURES: MOTOR  
VEHICLE SAFETY STANDARDS**

**Petitions for Extension of Time to Comment**

Section 553.19, rulemaking procedures, in Chapter 5 of Title 49, Code of Federal Regulations, currently requires that a petition for extension of time to comment on a rulemaking notice be received not later than 3 days before the expiration of the comment period specified in the notice. The 3-day requirement has proven unsatisfactory in situations where the petition is received close to the deadline, and the agency determines that it should be denied. The 3-day period does not allow sufficient time for the agency to process the petition, notify the petitioner of its determination, and leave time in the comment period for the petitioner to submit comments.

To remedy this problem, § 553.19 is hereby amended to require that petitions for extensions of time be submitted not later than 10 days be-

fore the expiration of the comment period. This will provide time for agency action within the comment period, and for petitioners whose petitions are denied to submit comments, if they wish, before the comment period expires.

Since this amendment concerns agency procedure, notice and public procedure thereon are unnecessary, and it is effective upon publication in the *Federal Register* (2-5-71), with respect to all rulemaking notices issued subsequent to its publication.

Issued on February 2, 1971.

Douglas W. Toms,  
Acting Administrator.

**36 F.R. 2511**  
**February 5, 1971**



**PREAMBLE TO AMENDMENT TO PART 553—RULEMAKING PROCEDURES:  
MOTOR VEHICLE SAFETY STANDARDS**

**Statement of Policy: Action on Petitions for Reconsideration**

The Center for Auto Safety has submitted a petition for rulemaking requesting that the NHTSA amend 49 CFR Part 553, Rulemaking Procedures, to provide that NHTSA must respond to petitions for reconsideration within 60 days of the date the rule in question is published in the *Federal Register*. The Center cited the interval of 5 months and 19 days that elapsed before issuance of the recent action on petitions concerning Standard No. 208, Occupant Crash Protection, as an illustration of the need for such a rule.

The NHTSA does not agree that the elapsed interval in that case, in view of the complexity of the issues raised and the hundreds of pages of highly technical material submitted in the petitions, was unjustified. This agency does, however, recognize that the period of reconsideration is one of considerable uncertainty to interested parties, since the rule in question has been issued, the effective date is approaching, and active preparation for compliance presumably is underway.

It has been determined, therefore, that a statement of policy on this subject will be appropriate, for the guidance of all parties concerned. A period of 90 days from issuance of the rule will be the normal period for action on reconsideration. This period will allow only 60 days for agency action, which is considered the shortest

practicable period for the necessary steps: detailed review of the petitions, gathering of supplementary information as necessary, making basic technical and policy decisions, drafting of the action document, and review by responsible officials. Where that period is found insufficient, a *Federal Register* notice will be issued stating the date by which action is expected to be completed.

Accordingly, an Appendix is hereby added to 49 CFR Part 553, . . . .

*Effective date:* March 1, 1972. This statement is issued in the interest of orderly administration and public information. It shall not affect the validity of any rules hereafter issued by the National Highway Traffic Safety Administration, or the legal rights, duties, or liabilities of any persons pursuant to those rules.

This notice is issued under the authority of section 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1407, and the delegation of authority at 49 CFR 1.51.

Issued on February 14, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 3632  
February 18, 1972**



## PREAMBLE TO AMENDMENT TO PART 553—RULEMAKING PROCEDURES

Sections 553.31 and 553.35 of Title 49, Code of Federal Regulations, currently specify that petitions for rulemaking and for reconsideration of rules should be addressed to the Docket Room of the National Highway Traffic Safety Administration. To conform to internal NHTSA correspondence procedures, §§ 553.31 and 553.35 are hereby amended by changing the submission address to the general mailing address specified in § 551.33. For public information, the same address is added to § 553.19, *Petitions for extension of time to comment*.

The requirement of § 553.31(b)(1) that petitions for rulemaking be submitted in duplicate is unnecessary and inconsistent with agency policy with respect to other submissions, and is being deleted. As in the case of other petitions

and comments, it is requested but not required that 10 copies be submitted.

Accordingly, amendments are made to 49 CFR Part 553, *Rulemaking Procedures: Motor Vehicle Safety Standards*. . . .

Since this amendment concerns internal agency procedure, it is found that notice and public procedure thereon are unnecessary.

Effective date: May 23, 1973.

(Sec. 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1407; delegation of authority at 49 CFR 1.51)

Issued on April 13, 1973.

James E. Wilson  
Acting Administrator  
**38 F.R. 9824**  
**April 20, 1973.**



## PREAMBLE TO AMENDMENT TO PART 553—RULEMAKING PROCEDURES

Parts 501, 551, and 553 of Title 49, Code of Federal Regulations, currently detail the delegated powers, general procedures, and rulemaking procedures utilized by the National Highway Traffic Safety Administration (NHTSA) to implement the National Traffic and Motor Vehicle Safety Act of 1966, Public Law 89-563. The Motor Vehicle Information and Cost Savings Act, Public Law 92-513, vests additional authority in the NHTSA. This amendment extends the applicability of Parts 501, 551, and 553 to the Cost Savings Act to establish uniform rulemaking procedures for both Acts.

Accordingly, amendments are made to 49 CFR, Part 501, "Organization and delegation of powers and duties", Part 551, "Procedural rules", and Part 553, "Rulemaking procedures: motor vehicle safety standards". . . .

Since this amendment relates to NHTSA organization, procedures, and practices, it is

found that notice and public procedure thereon are unnecessary.

Effective date: July 27, 1973. Because this notice is only an extension of existing procedures to new areas of jurisdiction, it is found that an immediate effective date is in the public interest.

(Secs. 9, Pub. L. 89-670, 80 Stat. 944, 49 U.S.C. 1657; 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; 102, 105, 201, 205, 302, and 408, Pub. L. 92-513, 86 Stat. 947, 15 U.S.C. 1912, 1915, 1941, 1945, 1962, and 1988; delegation of authority at 38 FR 12147).

Issued on July 23, 1973.

James E. Wilson  
Associate Administrator  
Traffic Safety Programs

**38 F.R. 20086**  
**July 27, 1973**



**PREAMBLE TO AMENDMENT TO PART 553—RULEMAKING PROCEDURES**

The purpose of this notice is to change the time specified, as an agency policy, for the NHTSA to act on petitions for reconsideration to 90 days from the closing date for the petitions.

On February 18, 1972, the NHTSA published a notice (37 FR 3632) adding an appendix to 49 CFR Part 553 that established an agency policy of responding to petitions for reconsideration within 90 days from publication of the final rule. The policy was instituted in order to remove some uncertainty as to the time when the agency would act on petitions following the issuance of a rule.

Since a period of 30 days from the issuance of a rule is allowed for the submission of petitions for reconsideration, the present policy allows only 60 days for the NHTSA to analyze the petitions and decide on, draft and have reviewed the appropriate response. It has become apparent that 60 days are not adequate time to complete this process. In conformance with the NHTSA's aim to specify a normal period for action on petitions for reconsideration, the period is being extended to 90 days from the closing date for petitions.

It has been determined that this is necessary to afford sufficient time for consideration of the petitions and the issuance of a response to the issues they raise.

As provided in the February 18, 1972 notice (37 FR 3632), where this period is found insufficient, a Federal Register notice will be issued stating the date by which action is expected to be completed.

Accordingly, the appendix to 49 CFR Part 553 is revised:

*Effective date:* April 25, 1974.

(Sec. 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1407); delegation of authority at 49 CFR 1.51)

Issued on April 22, 1974.

James B. Gregory  
Administrator

**39 F.R. 14593**  
**April 25, 1974**



## PREAMBLE TO AMENDMENT TO PART 553—RULEMAKING PROCEDURES

(Docket No. 75-17; Notice 2)

This notice amends title 49, Code of Federal Regulations, Part 553, *Rulemaking Procedures*, by deleting those sections of the part which set out procedures by which interested persons may petition the NHTSA to undertake rulemaking. These procedures have been incorporated in a new Part 552, *Petitions for Rulemaking, Defect, and Noncompliance Orders*, of Title 49, Code of Federal Regulations, published today in a separate notice.

The amendments provide that the National Highway Traffic Safety Administrator may initiate rulemaking on his own motion, on the recommendation of other agencies of the Federal Government, or on petition by any interested person after a determination in accordance with Part 552 that grant of the petition is advisable (§ 553.11).

The amendment also reverses the order of sections dealing with initiation of rulemaking and notice of proposed rulemaking, presently set out in sections 553.13 and 553.11, respectively, to more closely follow the chronology of the rulemaking process.

Only one comment, from American Motors Corporation, was received in response to the notice proposing these amendments (40 F.R. 25480, June 16, 1975). AMC asserted that the

language of the new section 553.11 could be misinterpreted to mean that recommendations from other Federal agencies would be treated as another form of petition for rulemaking, rather than as input to the Administrator in making a determination whether or not to commence rulemaking on his own motion. The NHTSA does not agree that the language of section 553.11 is subject to such an interpretation, as it neither expressly nor impliedly directs the Administrator to treat recommendations from other agencies as petitions. It merely continues the intent of the previous section 553.13 that the recommendations of other agencies may be considered by the Administrator in determining whether to initiate rulemaking proceedings in response to a petition from an interested party or on his own motion.

In light of the foregoing, 49 CFR Part 553, *Rulemaking Procedures*, is amended as follows:

*Effective date:* October 13, 1975.

(Sec. 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1407); delegation of authority at 49 CFR 1.51.)

Issued on September 4, 1975.

James B. Gregory  
Administrator

**40 F.R. 42015**  
**September 10, 1975**



**PREAMBLE TO AMENDMENT TO PART 553—RULEMAKING PROCEDURES****(Docket No. 75-17; Notice 1)**

On September 10, 1975, a notice was published amending 49 CFR Part 553, *Rulemaking Procedures*, to delete certain provisions of the regulation incorporated in a new Part 552, *Petitions for Rulemaking, Defect, and Noncompliance Orders*, published the same day (40 F.R. 42015). Section 553.35(a) refers to "petitions filed under § 553.31." However, the provisions of § 553.31 are now incorporated in 49 CFR Part 552. As a result, the notice amending Part 553 should have included an amendment to § 553.35(a) reflecting this change.

Accordingly, the phrase "petitions filed under § 553.31" in paragraph (a) of section 553.35 is changed to read "petitions filed under Part 552 of this chapter."

*Effective date:* November 14, 1975. Because this amendment clarifies a previous notice and imposes no additional burden on any person, it is found for good cause shown that an immediate effective date is in the public interest.

(Sec. 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1407); delegation of authority at 49 CFR 1.51.)

Issued on November 10, 1975.

James B. Gregory  
Administrator

**40 F.R. 53032**  
**November 14, 1975**



## PART 553—RULEMAKING PROCEDURES

### SUBPART A—GENERAL

#### § 553.1 Applicability.

【This part prescribes rulemaking procedures that apply to the issuance, amendment, and revocation of rules pursuant to the National Traffic and Motor Vehicle Safety Act of 1966 and the Motor Vehicle Information and Cost Savings Act. (38 F.R. 20086—July 27, 1973. Effective: 7/27/73)】

#### § 553.3 Definitions.

【“Acts” means the National Traffic and Motor Vehicle Safety Act of 1966, Public Law 89-563, 15 U.S.C. 1391, et seq., and the Motor Vehicle Information and Cost Savings Act, Public Law 92-513, 15 U.S.C. 1901, et seq. (38 F.R. 20086—July 27, 1973. Effective: 7/27/73)】

“Administrator” means the Administrator of the National Highway Traffic Safety Administration or a person to whom he has delegated final authority in the matter concerned.

【“Rule” includes any order, regulation, or Federal motor vehicle safety standard issued under the Acts. (38 F.R. 20086—July 27, 1973. Effective: 7/27/73)】

#### § 553.5 Regulatory docket.

(a) Information and data deemed relevant by the Administrator relating to rulemaking actions, including notices of proposed rulemaking; comments received in response to notices; petitions for rulemaking and reconsideration; denials of petitions for rulemaking and reconsideration; records of additional rulemaking proceedings under § 553.25; and final rules are maintained in the Docket Room, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590.

(b) 【Any person may examine any docketed material at the Docket Room at any time during regular business hours after the docket

is established, except material ordered withheld from the public under applicable provisions of the Acts and section 552(b) of Title 5 of the United States Code, and may obtain a copy of it upon payment of a fee. (38 F.R. 20086—July 27, 1973. Effective: 7/27/73)】

#### § 553.7 Records.

Records of the National Highway Traffic Safety Administration relating to rulemaking proceedings are available for inspection as provided in section 552(b) of Title 5 of the United States Code and Part 7 of the Regulations of the Secretary of Transportation (49 CFR Part 7; 32 F.R. 9284 et seq.).

### SUBPART B—PROCEDURES FOR ADOPTION OF RULES

#### § 553.11 【Initiation of rulemaking.

The Administrator may initiate rulemaking either on his own motion or on petition by any interested person after a determination in accordance with Part 552 of this title that grant of the petition is advisable. The Administrator may, in his discretion, also consider the recommendations of other agencies of the United States. (40 F.R. 42015—September 10, 1975. Effective: 10/13/75)】

#### § 553.13 【Notice of proposed rulemaking.

Unless the Administrator, for good cause, finds that notice is impracticable, unnecessary, or contrary to the public interest, and incorporates that finding and a brief statement of the reasons for it in the rule, a notice of proposed rulemaking is issued and interested persons are invited to participate in the rulemaking proceedings under applicable provisions of the Acts. (40 F.R. 42015—September 10, 1975. Effective: 10/13/75)】

#### § 553.15 Contents of notices of proposed rulemaking.

(a) Each notice of proposed rulemaking is published in the *Federal Register*, unless all per-

sous subject to it are named and are personally served with a copy of it.

(b) Each notice, whether published in the *Federal Register* or personally served, includes—

(1) A statement of the time, place, and nature of the proposed rulemaking proceedings;

(2) A reference to the authority under which it is issued;

(3) A description of the subjects and issues involved or the substance and terms of the proposed rule;

(4) A statement of the time within which written comments must be submitted; and

(5) A statement of how and to what extent interested persons may participate in the proceeding.

#### **§553.17 Participation by interested persons.**

(a) Any interested person may participate in rulemaking proceeding by submitting comments in writing containing information, views or arguments.

(b) In his discretion, the Administrator may invite any interested person to participate in the rulemaking procedures described in § 553.25.

#### **§ 553.19 Petitions for extension of time to comment.**

[A petition for extension of the time to submit comments must be received not later than 10 days before expiration of the time stated in the notice. The petitions must be submitted to: Administrator, National Highway Traffic Safety Administration, U. S. Department of Transportation, 400 Seventh Street, S.W., Washington, D. C. 20590. It is requested, but not required, that 10 copies be submitted. The filing of the petition does not automatically extend the time for petitioner's comments. Such a petition is granted only if the petitioner shows good cause for the extension, and if the extension is consistent with the public interest. If an extension is granted, it is granted to all persons, and it is published in the *Federal Register*. (38 F.R. 9824—April 20, 1973. Effective: 5/23/73)]

#### **§ 553.21 Contents of written comments.**

All written comments must be in English. It is requested, but not required, that 10 copies be

submitted. Any interested person must submit as part of his written comments all the material that he considers relevant to any statement of fact made by him. Incorporation of material by reference is to be avoided. However, if such incorporation is necessary, the incorporated material shall be identified with respect to document and page.

#### **§ 553.23 Consideration of comments received.**

All timely comments are considered before final action is taken on a rule-making proposal. Late filed comments may be considered as far as practicable.

#### **§ 553.25 Additional rulemaking proceedings.**

The Administrator may initiate any further rulemaking proceedings that he finds necessary or desirable. For example, interested persons may be invited to make oral arguments, to participate in conferences between the Administrator or his representative and interested persons at which minutes of the conference are kept, to appear at informal hearings presided over by officials designated by the Administrator at which a transcript or minutes are kept, or participate in any other proceeding to assure informed administrative action and to protect the public interest.

#### **§ 553.27 Hearings.**

(a) Sections 556 and 557 of Title 5, United States Code, do not apply to hearings held under this part. Unless otherwise specified, hearings held under this part are informal, nonadversary, fact-finding proceedings, at which there are no formal pleadings or adverse parties. Any rule issued in a case in which an informal hearing is held is not necessarily based exclusively on the record of the hearing.

(b) The Administrator designates a representative to conduct any hearing held under this part. The Chief Counsel designates a member of his staff to serve as legal officer at the hearing.

#### **§ 553.29 Adoption of final rules.**

Final rules are prepared by representatives of the office concerned and the Office of the Chief Counsel. The rule is then submitted to the Administrator for his consideration. If the Ad-

ministrator adopts the rule, it is published in the *Federal Register*, unless all persons subject to it are named and are personally served with a copy of it.

§ 553.31 **[Reserved.** (40 F.R. 42015—September 10, 1975. Effective: 10/13/75)]

§ 553.33 **[Reserved.** (40 F.R. 42015—September 10, 1975. Effective: 10/13/75)]

**§ 553.35 Petitions for reconsideration.**

(a) [Any interested person may petition the Administrator for reconsideration of any rule issued under this part. The petition must be submitted to: Administrator, National Highway Traffic Safety Administration, U.S. Department of Transportation, 400 Seventh Street, S.W., Washington, D.C. 20590. It is requested, but not required, that 10 copies be submitted. The petition must be received not later than thirty (30) days after publication of the rule in the *Federal Register*. Petitions filed after that time will be considered as petitions filed under § 552. The petition must contain a brief statement of the complaint and an explanation as to why compliance with the rule is not practicable, is unreasonable, or is not in the public interest. (38 F.R. 9824—April 20, 1973. Effective: 5/23/73)]

(b) If the petitioner requests the consideration of additional facts, he must state the reason they were not presented to the Administrator within the prescribed time.

(c) The Administrator does not consider repetitious petitions.

(d) Unless the Administrator otherwise provides, the filing of a petition under this section does not stay the effectiveness of the rule.

**§ 553.37 Proceedings on petitions for reconsideration.**

The Administrator may grant or deny, in whole or in part, any petition for reconsideration without further proceedings. In the event he

determines to reconsider any rule, he may issue a final decision on reconsideration without further proceedings, or he may provide such opportunity to submit comment or information and data as he deems appropriate. Whenever the Administrator determines that a petition should be granted or denied, he prepares a notice of the grant or denial of a petition for reconsideration, for issuance to the petitioner and issues it to the petitioner. The Administrator may consolidate petitions relating to the same rule.

**[§ 553.39 Effect of petition for reconsideration on time for seeking judicial review.**

The filing of a timely petition for reconsideration of any rule issued under this part postpones the expiration of the 60-day period in which to seek judicial review of that rule, as to every person adversely affected by the rule. Such a person may file a petition for judicial review at any time from the issuance of the rule in question until 60 days after publication in the *Federal Register* of the Administrator's disposition of any timely petitions for reconsideration. (35 F.R. 19268—Dec. 19, 1970. Effective: 12/19/70)]

**APPENDIX**

**[Statement of Policy: Action on Petitions for Reconsideration**

It is the policy of the National Highway Traffic Safety Administration to issue notice of the action taken on a petition for reconsideration within 90 days after the closing date for receipt of such petitions, unless it is found impracticable to take action within that time. In cases where it is so found and the delay beyond that period is expected to be substantial, notice of that fact, and the date by which it is expected that action will be taken, will be published in the *Federal Register*. (39 F.R. 14593—April 25, 1974. Effective: 4/25/74)]

**32 F.R. 15818**

**November 17, 1967**



## PREAMBLE TO PART 555—TEMPORARY EXEMPTION FROM MOTOR VEHICLE SAFETY STANDARDS

(Docket No. 72-30; Notice 2)

This notice amends Title 49 of the Code of Federal Regulations by adding a new Part 555, "Temporary Exemption from Motor Vehicle Safety Standards," effective January 29, 1973. A notice of proposed rulemaking on this subject was published December 1, 1972 (37 F.R. 25533), and opportunity afforded for comment.

On October 25, 1972 P.L. 92-548 was enacted, amending section 123 of the National Traffic and Motor Vehicle Safety Act of 1966 to provide four bases upon which a manufacturer of motor vehicles might apply for a temporary exemption from one or more Federal motor vehicle safety standards. The legislative intent is clearly expressed as to the information required to substantiate an application on each basis. A discussion follows of each basis, the required information and the principal issues raised in response to the proposal.

1. *Substantial Economic Hardship.* A manufacturer whose total motor vehicle production in his most recent year of manufacture did not exceed 10,000 may petition for relief on grounds that compliance would cause him substantial economic hardship and that he has, in good faith, attempted to comply with the standards. Hardship exemptions are granted for periods not to exceed three years. Section 123 of the Act and the proposed regulations require an applicant to include in his petition a complete financial statement showing the basis of the economic hardship and a complete description of his good faith effort to comply with the standards. Although it was not required by the Act, the NHTSA also proposed to require a description of the steps a manufacturer proposes to take during the exemption period to achieve full compliance and the estimated date by which full compliance is to be achieved.

Submissions on the issue of economic hardship were received from Senator Warren Magnuson, Chairman of the Senate Committee on Commerce, the Public Interest Research Group, the Center for Auto Safety, Freightliner Corporation, and Lotus Cars, Ltd. Senator Magnuson and the Research Group have suggested that the NHTSA should adopt application guidelines modeled after those of the Environmental Protection Agency for requests for suspension of the effective date of motor vehicle emission standards. The Research Group has drafted a model application form using the EPA guidelines as a departure point. Senator Magnuson also suggested that cost data concerning the affected component should be required, as well as a chronological analysis by the petitioner of its efforts to comply with the standard following issuance of the notice of proposed rulemaking. Finally, he urged that a company be required to submit an analysis of the effects on its economic stability of the absence of an exemption. The Center for Auto Safety believes that all financial data should be presented in dollar figures. Lotus Cars, Ltd. suggested that, if a manufacturer has no plans to achieve conformity because the production run of a model is nearing its end, the regulations should specifically permit him to so state. Freightliner Corporation commented that hardship should be considered in relation to the total economic picture "including the purchaser" and the particular job a vehicle is intended to perform. It expressed fear that the legislation was not enacted with multi-stage manufacturers in mind. Freightliner appears to be concerned about hardship situations that may occur to manufacturers whose total annual volume exceeds 10,000 units and who are called upon to provide costly custom equipment.

In formulating the regulations for hardship applications the NHTSA has adopted many of the suggestions of Senator Magnuson and the Public Interest Research Group. Engineering and financial data that must be submitted with the application will include a list or description of each component that would have to be modified in order to achieve compliance, together with an itemization of the estimated cost to the petitioner to modify each such component if required to do so on an emergency basis, or at the end of one-, two-, and three-year periods. The manufacturer will also include what it estimates as the price increase per vehicle to balance the total costs incurred were it to achieve compliance, and a statement of the anticipated effect of the price increase. Corporate balance sheets for the three fiscal years immediately preceding the application must be submitted, as well as a projected balance sheet for the fiscal year following any denial of the petition. The financial data must be in dollar figures, as the Center for Auto Safety suggested. The manufacturer would also be allowed to discuss other hardship factors that a denial would cause, such as loss of market. In its description of compliance efforts a manufacturer will be required to submit a chronological analysis showing the relationship of those efforts to the rule-making history of the standard, and to discuss alternate means of compliance that may have been considered, and the reasons for the rejection of each. As proposed, a manufacturer must also describe the steps to be taken while the exemption is in effect to achieve full compliance, and the estimated date by which full compliance will be achieved.

The NHTSA did not adopt the format and informational content of the EPA guidelines for several reasons. There is a basic difference in the Clean Air Act and the Traffic Safety Act. Under the former, the public health is paramount. All motor vehicles must meet certain emission standards by the 1975 model year. A one-year suspension is possible, but only upon technological grounds, and not for economic hardship. Suspensions are granted on the basis of fulfilling four criteria—(1) that it is essential to the public interest and public health of the United States, (2) that all good faith efforts have been made to meet the established standards, (3)

that effective emission control technology is not available, or has not been available for a sufficient time to achieve compliance prior to the effective date of such standard and (4) that the study and investigation of the National Academy of Sciences and other available information has not indicated that technology or other alternatives are available to meet the emission standards. By the 1976 model year all vehicles will comply and no further suspension is possible. The proof to support an emission standard suspension thus differs substantially from that required for hardship. On the other hand, under the Traffic Safety Act, motor vehicle safety must be balanced with other factors of the public interest including the desirability of affording a continuing and wide choice of vehicles to meet differing needs, and encouraging the continuation of relatively small manufacturers. In some instances, the safety exemption sought may be limited in time and scope, and extensively detailed information such as EPA requires may be unnecessary to document the request.

With reference to the comments by Freightliner, the NHTSA does take into account the vehicle purchaser, in that it is concerned with the effect of a denial upon the availability of vehicles and their retail prices. Moreover, throughout its existence this agency has been aware of the problems of custom-truck manufacturers and has tried to accommodate them, consistent with considerations of motor vehicle safety.

*2. Other Bases for Exemption.* A manufacturer may apply for an exemption for a period not to exceed two years and covering up to 2,500 vehicles for any 12-month period that the exemption is in effect on any one of three additional bases: that it would assist in the development or field evaluation of new motor vehicle safety features, that it would assist in the development or field evaluation of a low-emission vehicle, or that, in the absence of an exemption, it would be unable to sell a motor vehicle whose overall level of safety is equivalent to or exceeds the overall level of safety of non-exempted motor vehicles. To substantiate the development of safety features, it was proposed that the applicant establish the innovational nature of the safety feature and that it would provide a level of safety at

least equivalent to the level of safety established in the standard from which exemption is sought. To substantiate the development of a low-emission vehicle, it was proposed that the applicant establish the emission feature of his vehicle and that an exemption would aid in its development as well as evidence that a temporary exemption would not unreasonably degrade the safety of the vehicle. Finally, to substantiate that failure to provide an exemption would prevent the sale of an otherwise safe vehicle, it was proposed that an applicant submit evidence that the vehicle could not otherwise be sold, and provide an analysis of how the vehicle provides an overall level of safety equal to or exceeding the overall level of safety of non-exempted vehicles.

The Public Interest Research Group again suggested that the proposal be amplified to provide guidelines similar to those of EPA, and supplied formats for each of the three bases. The NHTSA concurs with the Research Group to the extent that it has expanded the proposal so that the regulation includes some of the information and data suggested, but it has not adopted the format in detail, for the reasons previously discussed.

A manufacturer who wishes to develop or evaluate new safety features must document the innovational nature of the features. He must also submit an analysis establishing that the safety level provided by the feature equals or exceeds the level of safety established in the standard from which exemption is sought, including a description of how complying and non-complying vehicles differ, the results of tests that demonstrate performance which meets or exceeds the safety levels of the standard, and substantiation that a temporary exemption would facilitate the development or field evaluation of the vehicle. The manufacturer is also required to indicate his intent at the end of the exemption period to conform to the standard, or to petition for rulemaking to amend the standard so that the feature might be incorporated into it.

Somewhat similar information is required of a manufacturer who wishes to develop or evaluate a low-emission vehicle, although in this instance the NHTSA is also interested in a manufacturer's test results showing how far the vehicle

deviates from the standard, as part of the manufacturer's showing that the exemption would not unreasonably degrade the safety of the vehicle.

A manufacturer who petitions on the basis that the overall level of safety is equivalent to or exceeds the overall level of non-exempted vehicles must describe how exempted and non-exempted vehicles differ, describe safety features that the vehicle offers as standard equipment that are not required by the Federal standards, and submit both comparative test results showing how far the vehicle deviates from the standard, and the results of any tests showing that the vehicle exceeds the minimum requirements of any Federal standard. The manufacturer must also state whether he intends to comply at the end of the exemption period. Petitions for renewal of an exemption under each of these three bases are required to state the number of exempted vehicles sold in the United States under the prior exemption.

3. *Miscellaneous Comments.* The Public Interest Research Group and the Center for Auto Safety requested that § 555.7, *Processing of petitions*, be rewritten to include a provision for informal public hearings to be held at the discretion of the Administrator. Such a provision, in the opinion of the Research Group, "might well preclude protracted litigation by fully addressing issues in an informal public hearing." The requested provision has not been included in the final rule as it is considered unnecessary. Such a power is inherent in the Administrator's general powers and may be invoked in any appropriate occasions. It is not specifically required by the legislation, which deems notice and an opportunity to comment in writing a sufficient forum and means of assuring informed administrative action and of protecting the public interest.

The Center for Auto Safety requested that § 555.8, *Termination of temporary exemptions*, include a provision that the Administrator will entertain petitions for termination from interested persons. Although such a provision is not necessary since the agency would consider any information brought to its attention that is relevant to its regulatory functions, a section to this effect has been added for public information. It pro-

vides that petitions for termination of an exemption will be handled in accordance with the procedures of §§ 553.31 and .33 on petitions for rulemaking. The Center also asked whether the civil penalty provisions of section 109 could apply in the event it was determined that an exemption had been granted on the basis of fraudulent information. The NHTSA believes that civil penalties could apply in this instance, through the application of sections 108, 109, and 112. In addition, the general fraud provisions of 18 U.S.C. 1001 provide both criminal and civil penalties for submission of false information.

Senator Magnuson, Lotus, and the Research Group commented that the temporary exemption labels (§ 555.9) should include the title of the standard as a matter of clearer public disclosure. The comments have merit and the labels, both windshield and certification, must state the title of any exempted standard. The Research Group has further commented that the NHTSA has ignored the provision of Section 123(b) that written notification of the exemption be delivered to the dealer and first purchaser. The agency does not agree with the Research Group and believes that the windshield label constitutes written notification, fulfilling this discretionary requirement.

Finally, comments were addressed to the adequacy of § 555.10, *Availability for public inspection*. The NHTSA has adopted the Center for Auto Safety's comment that subsection (a) should be revised to provide availability of memoranda of all meetings held pursuant to § 555.7(a). However, the NHTSA has not agreed with the Center's suggestion that the agency commit itself

to make such memoranda available within a specified time limit "such as five working days". The agency will use its best efforts to place memoranda of this nature in the dockets as soon as practicable. The Center, Senator Magnuson, and the Research Group pointed out that Section 123(b) of the Act authorizes the Secretary to withhold only information "not relevant to the application for exemption". This agency concurs and minor rewording of § 555.10(b) clarifies this. Senator Magnuson encourages the agency "as a general policy, to release information contained in applications for exemptions on the basis that all such information is relevant to the application or it would not have been included by the manufacturer". The NHTSA agrees with this general policy. It will carefully scrutinize requests for confidential treatment of information and liberally interpret the relevancy of that information to the petition.

In consideration of the foregoing, Title 49 Code of Federal Regulations is amended by adding Part 555, *Temporary Exemption from Federal Motor Vehicle Safety Standards*, as set forth below.

*Effective date:* January 29, 1973.

(Sec. 3, Pub. L. 92-548, 86 Stat. 1159; Sec. 119, Pub. L. 89-563 (15 U.S.C. 1410, 1407), 80 Stat. 718; delegation of authority at 49 CFR 1.51)

Issued on January 22, 1973.

Douglas W. Toms  
Administrator

**38 F.R. 2693**  
**January 29, 1973**

## PREAMBLE TO AMENDMENT TO PART 555—TEMPORARY EXEMPTION FROM MOTOR VEHICLE SAFETY STANDARDS

(Docket No. 72-30; Notice 4)

This notice amends 49 CFR Part 555 to specify that the NHTSA will notify petitioners directly when their petitions are found not to contain required information, and that income statements must be included in support of hardship petitions.

The NHTSA proposed these amendments on October 29, 1973 (38 F.R. 29817). Interested persons have been offered an opportunity to participate in the making of the amendments and due consideration has been given to the two comments that were received in response to the notice.

A comment by H. E. Waterman of Bowie, Maryland, suggests that the agency adopt the essence of Federal Aviation Regulation § 11.25 *Petition for rulemaking or exemptions* to emphasize public interest factors, rather than the "private interests" of the petitioner. Mr. Waterman commented that "If an applicant considers his finances to be of interest relative to his petition, he should be given an opportunity to state his financial condition, but that should not be emphasized by establishment of such a requirement".

Mr. Waterman's comment is inapposite. The exemption authority of the Federal Aviation Administration is broader than that provided the NHTSA, and grant of exemption under FAR § 11.25 is not based specifically upon factors of substantial economic hardship. The NHTSA has concluded that it must request detailed financial data from hardship petitioners to assist it and the public in evaluating the merits of hardship claims, and it does not request such information of petitioners who file for exemption on other grounds.

Mr. Waterman's comment on public interest factors however is in point. In addition to finding that one of the four appropriate statutory bases for exemption is present, the Administrator must also make a finding that the exemption is in the public interest and consistent with the objectives of the National Traffic and Motor Vehicle Safety Act. The regulation currently does not specifically require the petitioner to submit public interest arguments, and the NHTSA believes that it should be amended to so provide. Accordingly § 555.5 *Petition for exemption* is being amended to require the petition to "contain any information, views, or arguments available to the petitioner as to why the granting of the petition would be in the public interest and consistent with the objectives of the Act".

American Motors commented that income statements and balance sheets are generally only part of a larger overall picture of the financial impact of compliance, and that to specifically require them might exclude the submission of other documents which could similarly describe the impact. It suggests amending the regulation to require only that the basis for an exemption for substantial economic hardship be fully documented.

The NHTSA does not consider its informational requirements restrictive and has not adopted the comments of American Motors. Section 556.(a)(1) contains a broad request for "engineering and financial information demonstrating in detail how compliance or failure to obtain an exemption would cause substantial economic hardship" which includes but is not limited to five specific categories of information, plus "(vi) A discussion of other hardships (e.g.

Effective: March 15, 1974

loss of market) that the petitioner desires the agency to consider".

In consideration of the foregoing, 49 CFR Part 555 is amended . . . .

*Effective date:* March 15, 1974.

(Sec. 3, Pub. L. 92-548, 86 Stat 1159, 15 U.S.C. 1410; sec. 119, Pub. L. 89-563, 80 Stat. 718, 15

U.S.C. 1407; delegation of authority at 49 CFR 1.51.)

Issued on February 7, 1974.

James B. Gregory  
Administrator

**39 F.R. 5489**

**February 13, 1974**

**PREAMBLE TO AMENDMENT TO PART 555—TEMPORARY EXEMPTION FROM  
MOTOR VEHICLE SAFETY STANDARDS**

(Docket No. 72-30; Notice 5)

This notice amends 49 CFR Part 555 to specify that denials as well as grants are published in the *Federal Register*, and to clarify that the effective date of a temporary exemption is its date of publication in the *Federal Register* unless a later effective date is specified. The amendments also specify that an expiring exemption does not terminate during consideration of a petition for its renewal.

These amendments pertain to agency practice and are interpretative in nature. Accordingly, pursuant to 5 U.S.C. § 553(b), it has been found that no notice of proposed rulemaking is called for.

Section 555.7(a) is amended to specify that when the Administrator determines that a petition does not contain adequate justification and is denied, the petitioner is notified in writing and a notice of the denial is published in the *Federal Register*. Publication of denials has been an agency practice and the regulation is amended to reflect it.

A new subparagraph (f) is added to 49 CFR 555.7 to specify that the effective date of a temporary exemption is the date of publication of the notice of grant in the *Federal Register* unless a later effective date is specified. Interested persons have asked whether exemptions can be made effective as of the date of the filing of a petition for relief, or can include the total production of a model year that begins before the date an exemption is granted. This amendment is intended to clarify the agency's policy that exemptions should not have a retroactive effect which could serve to excuse manufacture of nonconforming

vehicles in violation of section 108(a)(1) of the National Traffic and Motor Vehicle Safety Act.

In section 555.8 the references to paragraph (c) in paragraphs (a) and (b) are changed to paragraph (d), to indicate that the cause of an early termination of an exemption by the Administrator is through administrative action (paragraph (d)), rather than through petition by interested persons (paragraph (c)). A new paragraph (c) is added to § 555.8, implementing the Administrative Procedure Act provision at 5 U.S.C. § 558(c), stating in effect that when a timely and sufficient application for renewal of a temporary exemption has been received before the exemption's termination date, the exemption does not expire until the Administrator grants or denies the petition for renewal. A timely application is one that is received not later than 60 days before the expiration of an exemption. A sufficient application is one that contains information required by § 555.5.

In consideration of the foregoing, 49 CFR Part 555 is amended. . . .

Effective date: November 24, 1974.

(Sec. 3, Pub. L. 92-548, 86 Stat. 1159, 15 U.S.C. 1410; sec. 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1407; delegation of authority at 49 CFR 1.51).

Issued on October 21, 1974.

James B. Gregory  
Administrator

**39 F.R. 37988**

**October 25, 1974**



## PREAMBLE TO AMENDMENT TO PART 555—TEMPORARY EXEMPTION FROM MOTOR VEHICLE SAFETY STANDARDS

(Docket No. 73-20; Notice 6)

This notice amends 49 CFR § 555.10(b) to clarify that information made available for public inspection shall include all submitted materials that are specifically required by § 555.6. The amendment is effective 30 days after publication in the *Federal Register*.

This amendment pertains to agency practice and is clarifying and interpretative in nature. Accordingly, pursuant to 5 U.S.C. 553(b), it is found that notice of proposed rulemaking is unnecessary.

Currently § 555.10(b) states that "Information made available for inspection shall not include materials not relevant to the petition that are to be withheld from the public in accordance with sections 112 and 113 of the Act (15 U.S.C. 1401, 1402) and section 552(b) of Title 5 of the United States Code."

Some petitioners for temporary exemptions on hardship grounds have requested that confidential treatment be given such items as estimated price increases that would be caused by compliance, projected balance sheets and income statements for the fiscal year following denial of a petition, or the efforts to be taken to achieve compliance while the exemption is in effect. The usual reason given is that the information could be harmful to the petitioner in the hands of its competitors. The NHTSA has uniformly denied

such requests if they involve materials that the regulation specifically requires to be submitted. These materials are necessary for a determination by the NHTSA of whether the statutory basis for exemption exists. This agency finds that all materials it requests pursuant to the regulation, and which are used in its own decisions, should be available for inspection in the docket by members of the public who wish to reach their own conclusion on the merits of the petition. Materials submitted gratuitously will, of course, be withheld from availability for inspection, if the petitioner requests it and if it is a matter that may be withheld in accordance with sections 112, 113, and 158 of the National Traffic and Motor Vehicle Safety Act.

In consideration of the foregoing, 49 CFR § 555.10(b) is amended. . . .

*Effective date:* May 30, 1975.

(Sec. 3, Pub. L. 92-548, 86 Stat. 1159, 15 U.S.C. 1410, sec. 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1407; delegation of authority at 49 CFR 1.51.)

Issued on April 24, 1975.

James B. Gregory  
Administrator

**40 F.R. 18789**  
**April 30, 1975**



## PREAMBLE TO AMENDMENT TO PART 555—TEMPORARY EXEMPTION FROM FEDERAL MOTOR VEHICLE SAFETY STANDARDS

(Docket 73-20; Notice 7)

This notice amends 49 CFR Part 555 to reflect the fact that the Administrator considers petitions to modify exemptions.

On July 7, 1975, the Administrator published notice (40 F.R. 28504) of a petition by General Motors Corporation to modify the temporary exemption previously granted Motor Coach Industries, Inc. Under § 555.8(c) the Administrator may receive petitions to terminate temporary exemptions, and, under § 555.8(d), he may terminate them. The Administrator's power with respect to temporary exemptions necessarily includes modification of an exemption when to do so is in the public interest and consistent with the objectives of the National Traffic and Motor Vehicle Safety Act, or when the exemption is based upon misrepresentations. Accordingly, § 555.8(c) and § 555.8(d) are amended to reflect this fact. In addition, the section references to processing of petitions (§ 555.31, § 555.35) are changed to Part 552 to reflect recent amendments (40 F.R. 42014). A new paragraph

is added to specify that notices of termination or modification will appear in the Federal Register.

In consideration of the foregoing, in § 555.8 of Title 49, Code of Federal Regulations, paragraph (c) and the introductory phase of paragraph (d) are revised, and paragraph (f) is added. . . .

*Effective date:* September 10, 1975. Since the amendment reflects internal policy and procedure it may be made effective upon publication.

(Sec. 3, Pub. L. 92-548, 86 Stat 1159, 15 U.S.C. 1410, Sec. 119, Pub. L. 89-563, 80 Stat 718, 15 U.S.C. 1407; delegation of authority at 49 CFR 1.51.)

Issued on September 4, 1975.

James B. Gregory  
Administrator

**40 F.R. 42015**  
**September 10, 1975**



## PART 555—TEMPORARY EXEMPTION FROM MOTOR VEHICLE SAFETY STANDARDS

**§ 555.1 Scope.** This part establishes requirements for the temporary exemption, by the National Highway Traffic Safety Administration (NHTSA), of certain motor vehicles from compliance with one or more Federal motor vehicle safety standards in accordance with section 123 of the National Traffic and Motor Vehicle Safety Act of 1966, 15 U.S.C. 1410.

**§ 555.2 Purpose.** The purpose of this part is to provide a means by which manufacturers of motor vehicles may obtain temporary exemptions from Federal motor vehicle safety standards on the bases of substantial economic hardship, facilitation of the development of new motor vehicle safety or low-emission engine features, or existence of an equivalent overall level of motor vehicle safety.

**§ 555.3 Application.** This part applies to manufacturers of motor vehicles.

### § 555.4 Definitions.

“Administrator” means the National Highway Traffic Safety Administrator or his delegate.

“United States” means the several States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, the Virgin Islands, the Canal Zone, and American Samoa.

### § 555.5 Petition for exemption.

(a) A manufacturer of motor vehicles may petition the NHTSA for a temporary exemption from any Federal motor vehicle safety standard or for a renewal of any exemption on the bases of substantial economic hardship, facilitation of the development of new motor vehicle safety or low-emission engine features, or the existence of an equivalent overall level of motor vehicle safety.

(b) Each petition filed under this part for an exemption or its renewal must—

- (1) Be written in the English language;
- (2) Be submitted in three copies to:

Administrator, National Highway Traffic Safety Administration, Washington, D.C. 20590;

(3) State the full name and address of the applicant, the nature of its organization (individual, partnership, corporation, etc.) and the name of the State or country under the laws of which it is organized;

(4) State the number and title, and the text or substance of the standard or portion thereof from which the temporary exemption is sought, and the length of time desired for such exemption;

[(5) Set forth the basis for the petition and the information required by § 555.6(a), (b), (c), or (d) as appropriate.

(6) Specify any part of the information and data submitted which petitioner requests be withheld from public disclosure and the reason for the request; and

(7) Set forth the reasons why the granting of the exemption would be in the public interest and consistent with the objectives of the National Traffic and Motor Vehicle Safety Act. (39 F.R. 5489—February 13, 1974. Effective: 3/15/74)]

(c) The knowing and willful submission of false, fictitious or fraudulent information will subject the petitioner to the civil and criminal penalties of 18 U.S.C. 1001.

### § 555.6 Basis for petition.

(a) If the basis of the petition is substantial economic hardship the petitioner shall provide the following information.

(1) Engineering and financial information demonstrating in detail how compliance or failure to obtain an exemption would cause substantial economic hardship, including—

- (i) A list or description of each item of motor vehicle equipment that would have to be modified in order to achieve compliance;

(ii) The itemized estimated cost to modify each such item of motor vehicle equipment if compliance were to be achieved—

(A) As soon as possible,

(B) At the end of a one-year exemption period, (if the petition is for one year or more)

(C) At the end of a two-year exemption period, (if the petition is for two years or more)

(D) At the end of a three-year exemption period, (if the petition is for three years)

(iii) The estimated price increase per vehicle to balance the total costs incurred pursuant to subdivision (ii) of this subparagraph and a statement of the anticipated effect of each such price increase;

[(iv) Corporate balance sheets and income statements for the three fiscal years immediately preceding the filing of the application;

(v) Projected balance sheet and income statement for the fiscal year following a denial of the petition; and (39 F.R. 5489—February 13, 1974. Effective: 3/15/74)]

(vi) A discussion of any other hardships (*e.g.*, loss of market) that the petitioner desires the agency to consider.

(2) A description of its efforts to comply with the standards, including—

(i) A chronological analysis of such efforts showing its relationship to the rulemaking history of the standard from which exemption is sought;

(ii) A discussion of alternate means of compliance considered and the reasons for rejection of each;

(iii) A description of the steps to be taken, while the exemption is in effect, and the estimated date by which full compliance will be achieved either by design changes or termination of production of nonconforming vehicles; and

(iv) The total number of motor vehicles produced by or on behalf of the petitioner in the 12-month period prior to filing the peti-

tion, and the inclusive dates of the period. (Section 123 of the Act limits eligibility for exemption on the basis of economic hardship to manufacturers whose total motor vehicle production does not exceed 10,000.)

(b) If the basis of the petition is the development or field evaluation of new motor vehicle safety features, the petitioner shall provide the following information:

(1) A description of the safety features, and research, development, and testing documentation establishing the innovational nature of such features.

(2) An analysis establishing that the level of safety of the features is equivalent to or exceeds the level of safety established in the standard from which exemption is sought, including—

(i) A detailed description of how a motor vehicle equipped with the safety features differs from one that complies with the standard;

(ii) If applicant is presently manufacturing a vehicle conforming to the standard, the results of tests conducted to substantiate certification to the standard; and

(iii) The results of tests conducted on the safety features that demonstrate performance which meets or exceeds the requirements of the standard.

(3) Substantiation that a temporary exemption would facilitate the development or field evaluation of the vehicle.

(4) A statement whether, at the end of the exemption period, the manufacturer intends to conform to the standard, apply for a further exemption, or petition for rulemaking to amend the standard to incorporate the safety features.

(5) A statement that not more than 2,500 exempted vehicles will be sold in the United States in any 12-month period for which an exemption may be granted pursuant to this paragraph. A petition for renewal of such an exemption shall also include the total number of exempted vehicles sold in the United States under the existing exemption.

(c) If the basis of the petition is the development or field evaluation of a low-emission vehicle, the petitioner shall provide—

(1) Substantiation that the motor vehicle is a low-emission vehicle as defined by section 123(g) of the Act.

(2) Research, development, and testing documentation establishing that a temporary exemption would not unreasonably degrade the safety of the vehicle, including—

(i) A detailed description of how the motor vehicle equipped with the low-emission engine would, if exempted, differ from one that complies with the standard;

(ii) If applicant is presently manufacturing a vehicle conforming to the standard, the results of tests conducted to substantiate certification to the standard;

(iii) The results of any tests conducted on the vehicle that demonstrate its failure to meet the standard, expressed as comparative performance levels; and

(iv) Reasons why the failure to meet the standard does not unreasonably degrade the safety of the vehicle.

(3) Substantiation that a temporary exemption would facilitate the development or field evaluation of the vehicle.

(4) A statement whether, at the end of the exemption period, the manufacturer intends to conform with the standard.

(5) A statement that not more than 2,500 exempted vehicles will be sold in the United States in any 12-month period for which an exemption may be granted pursuant to this paragraph. A petition for renewal of an exemption shall also include the total number of exempted vehicles sold in the United States under the existing exemption.

(d) If the basis of the petition is that the petitioner is otherwise unable to sell a motor vehicle whose overall level of safety is equivalent to or exceeds the overall level of safety of non-exempted motor vehicles, the petitioner shall provide—

(1) A detailed analysis of how the vehicle provides an overall level of safety equivalent to or exceeding the overall safety of non-exempted vehicles, including—

(i) A detailed description of how the motor vehicle, if exempted, differs from one that conforms to the standard;

(ii) A detailed description of any safety features that the motor vehicle offers as standard equipment that are not required by the Federal motor vehicle safety standards;

(iii) The results of any tests conducted on the vehicle demonstrating that it fails to meet the standard, expressed as comparative performance levels;

(iv) The results of any tests conducted on the vehicle demonstrating that its overall level of safety exceeds that which is achieved by conformity to the standards.

(v) Other arguments that the overall level of safety of the vehicle equals or exceeds the level of safety of non-exempted vehicles.

(2) Substantiation that compliance would prevent the sale of the vehicle.

(3) A statement whether, at the end of the exemption period, the manufacturer intends to comply with the standard.

(4) A statement that not more than 2,500 exempted vehicles will be sold in the United States in any 12-month period for which an exemption may be granted pursuant to this paragraph. A petition for renewal of an exemption shall also include the total number of exempted vehicles sold in the United States under the existing exemption.

#### § 555.7 Processing of petitions.

(a) [The NHTSA publishes in the *Federal Register*, affording opportunity for comment, a notice of each petition containing the information required by this part. However, if the NHTSA finds that a petition does not contain the information required by this part, it so informs the petitioner, pointing out the areas of insufficiency and stating that the petition will not receive further consideration until the required information is submitted. (39 F.R. 5489—February 13, 1974. Effective: 3/15/74)]

(b) No public hearing, argument or other formal proceeding is held directly on a petition filed under this part before its disposition under this section.

(c) Any interested person may, upon written request, appear informally before an appropriate official of the NHTSA to discuss a petition for

exemption or the action taken in response to a petition.

(d) [If the Administrator determines that the petition does not contain adequate justification, he denies it and notifies the petitioner in writing. He also publishes in the *Federal Register* a notice of the denial and the reasons for it. (39 F.R. 37998—October 25, 1974. Effective: 11/24/74)]

(e) If the Administrator determines that the petition contains adequate justification, he grants it, and notifies the petitioner in writing. He also publishes in the *Federal Register* a notice of the grant and the reasons for it.

[(f) Unless a later effective date is specified in the notice of the grant, a temporary exemption is effective upon publication of the notice in the *Federal Register* and exempts vehicles manufactured on and after the effective date. (39 F.R. 37988—October 25, 1974. Effective: 11/24/74)]

**§ 555.8 Termination of temporary exemptions.**

(a) [A temporary exemption from a standard granted on the basis of substantial economic hardship terminates according to its terms but not later than 3 years after the date of issuance unless terminated sooner pursuant to paragraph (d) of this section. (39 F.R. 37988—October 25, 1974. Effective: 11/24/74)]

(b) [A temporary exemption from a standard granted on a basis other than substantial economic hardship terminates according to its terms but not later than 2 years after the date of issuance unless terminated sooner pursuant to subparagraph (d). (39 F.R. 37988—October 25, 1974. Effective: 11/24/74)]

(c) [Any interested person may petition for the termination or modification of an exemption granted under this part. The petition will be processed in accordance with the procedures of Part 552 of this chapter. (40 F.R. 42015—September 10, 1975. Effective: 9/10/75)]

(d) [The Administrator terminates or modifies a temporary exemption if he determines that—(40 F.R. 42015—September 10, 1975. Effective: 9/10/75)]

(1) The temporary exemption is no longer consistent with the public interest and the objectives of the Act; or

(2) The temporary exemption was granted on the basis of false, fraudulent, or misleading representations or information.

[(e) If a petition for renewal of a temporary exemption that meets the requirements of § 555.5 has been filed not later than 60 days before the termination date of an exemption, the exemption does not terminate until the Administrator grants or denies the petition for renewal. (39 F.R. 37988—October 25, 1974. Effective: 11/24/74)]

[(f) The Administrator publishes in the *Federal Register* a notice of

(i) a petition for termination or modification of an exemption and the action taken in response to it; and

(ii) any termination or modification of an exemption pursuant to the Administrator's own motion. (40 F.R. 42015—September 10, 1975. Effective: 9/10/75)]

**§ 555.9 Temporary exemption labels.** A manufacturer of an exempted vehicle shall—

(a) Submit to the Administrator, within 30 days after receiving notification of the grant of an exemption, a sample of the certification label required by PART 567 of this chapter and paragraph (c) of this section;

(b) Affix securely to the windshield or side window of each exempted vehicle a label in the English language containing the statement required by paragraph (c)(1) or (c)(2) of this section, and with the words "SHOWN ABOVE" omitted.

(c) Meet all applicable requirements of Part 567 of this chapter, except that—

(1) Instead of the statement required by § 567.4(g)(5) the following statement shall appear: "THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE EXCEPT FOR STANDARD NOS. [Listing the standards by number and title for which an exemption has been granted]. EXEMPTED PURSUANT TO NHTSA EXEMPTION NO. \_\_\_\_\_.

(2) Instead of the statement required by § 567.5(a)(7), the following statement shall ap-

pear: THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT IN [Month, Year] EXCEPT FOR STANDARD NOS. [Listing the standards by number and title for which an exemption has been granted]. EXEMPTED PURSUANT TO NHTSA EXEMPTION NO. \_\_\_\_\_.

**§ 555.10 Availability for public inspection.**

(a) Information relevant to a petition under this part, including the petition and supporting data, memoranda of informal meetings with the petitioner or any other interested person, and the grant or denial of the petition, is available for public inspection, except as specified in paragraph (b) of this section, in the Docket Section, Room 5221, National Highway Traffic Safety

Administration, 400 Seventh Street, S.W., Washington, D.C. 20590. Copies of available information may be obtained, as provided in Part 7 of the regulations of the Office of the Secretary of Transportation (49 CFR Part 7).

(b) [Information made available for inspection shall include all submitted materials that are specifically required by § 555.6, but shall not include materials not relevant to the petition for which confidentiality is requested, and may be granted, in accordance with sections 112, 113, and 158 of the Act (15 U.S.C. 1401, 1402, and 1418) and section 552(b) of Title 5 of the United States Code. (40 F.R. 18789—April 30, 1975. Effective: 5/30/75)]

**38 F.R. 2693**  
**January 29, 1973**



**PREAMBLE TO PART 566—MANUFACTURER IDENTIFICATION****(Docket No. 71-11; Notice 2)**

This notice adopts a new Part 566 in Title 49, Code of Federal Regulations, to require manufacturers of motor vehicles, and manufacturers of motor vehicle equipment to which a motor vehicle safety standard applies, to submit identifying information and a description of the items they produce. A notice of proposed rule-making on this subject was published on April 28, 1971 (36 F.R. 7970). The comments received in response to the notice have been considered in this issuance of a final rule. The final rule exempts tire manufacturers from coverage, deletes the required submittal of estimated annual production, and requires the manufacturer to submit revised information when necessary to keep his entry current.

As noted in the proposal of April 28, 1971 (36 F.R. 7970) the establishment of a centrally organized system to collect information regarding the manufacturer's corporate status, mailing address, and items manufactured has been found necessary for efficient enforcement of the Act, as well as for distribution of information to manufacturers.

Several manufacturers stated that the information required by the regulations is already submitted to the NHTSA under existing regulations. This claim is true only with respect to tire manufacturers, who are required under Part 574, Tire Identification and Recordkeeping, (36 F.R. 1196, at 1197-8) to submit to the NHTSA data which would meet the requirements of the proposed regulation in order to obtain their code numbers. The tire manufacturers' request for exemption has therefore been granted.

While it is true that the Defect Reports regulation (36 F.R. 3064) requires the submittal of some information similar to the data collected under the proposed regulation, the former re-

quirement does not provide the comprehensive data required by the Administration.

The largest number of comments were directed at the required submittal of estimated annual production figures. Upon consideration of the comments and review of the Administration's need for this data, it has been determined that its collection would create difficulties for the industry that outweigh its benefits, particularly since approximate information about production is available to the NHTSA from other sources. Therefore this requirement is deleted.

A number of manufacturers were uncertain about their coverage under the proposed regulation. One packager of brake fluids stated that he did not manufacture the fluid and wished to know whether he is considered a manufacturer under the regulation. The packager's operations may significantly affect the quality of the brake fluid. Moreover, under amended Federal Vehicle Safety Standard No. 116, "Motor Vehicle Hydraulic Brake Fluids", the original manufacturer in some cases will not be identified on the container label. For these reasons it has been determined that for the purposes of this regulation, a person who packages brake fluid from a bulk state shall be considered a manufacturer of motor vehicle equipment and therefore subject to the regulation.

A manufacturer of mobile homes sought an exemption from coverage on the grounds that the general public does not usually engage in transporting mobile structure trailers. The fact that only "experts" transport the regulated vehicle is not germane to the question of its inclusion under the regulation, however, since the identification requirement is based on the general determination that the centralized data system

will improve enforcement of the Act and communication with manufacturers.

An incomplete vehicle manufacturer submitted a comment regarding the requirement that manufacturers of multipurpose passenger vehicles, trucks and trailers submit a description indicating the intended final use of their product. The final rule as issued does not specifically include incomplete vehicle manufacturers. A notice of proposed rulemaking published in this issue of the Federal Register would, however, amend the regulation to provide coverage of incomplete vehicles.

The time-of-submittal section has been clarified in light of the comments. It is intended that a manufacturer supply the required information when he begins to manufacture the motor vehicle or covered equipment. The regulation has been amended to indicate that subsequent submittals will be necessary only when changes in the manufacturer's business render the submitted data inaccurate or incomplete.

A number of manufacturers offered recommendations as to the classification system to be adopted by the Administration utilizing the data

collected under this regulation. Such discussion is beyond the scope of this regulation, but these suggestions will be considered at the appropriate time.

One manufacturer petitioned for a public hearing to discuss the NHTSA's planned use of the information collected under the regulation. Since the required submittal of estimated annual production figures has been deleted from the final rule, the concern about the use of the information by the Administration would appear to be dispelled, and a public hearing has been found to be unnecessary. The petition is therefore denied.

*Effective date:* February 1, 1972.

In consideration of the above, Part 566, Manufacturer Identification, is added to Title 49, Code of Federal Regulations. . . .

Issued on October 22, 1971.

Douglas W. Toms  
Administrator

36 F.R. 20977  
November 2, 1971

**PREAMBLE TO AMENDMENT TO PART 566—MANUFACTURER IDENTIFICATION**

(Docket No. 71-11; Notice 4)

This notice amends Part 566 in Title 49, Code of Federal Regulations, to provide for the coverage of "incomplete vehicles," as defined in Part 568, Vehicles Manufactured in Two or More Stages. A notice of proposed rulemaking on this subject was published on November 2, 1971 (36 F.R. 20987). No comments on the proposed amendment were received, and the amendment is adopted as proposed.

Part 566, published on November 2, 1971 (36 F.R. 20977), requires manufacturers of motor vehicles and of motor vehicle equipment other than tires to which a motor vehicle safety standard applies to submit identifying information and a description of the items which they produce. In responding to a comment on the proposed regulation from an incomplete vehicle manufacturer, it was noted that while the regulation clearly covers intermediate and final-stage manufacturers (as defined in Part 568) it makes no reference to incomplete vehicle manufacturers. This amendment is intended to clarify this ambiguity by specifically providing for coverage of incomplete vehicles.

The incomplete vehicle manufacturer stated that he was unaware of the final use of his light truck vehicles and requested that he be permitted to submit a brief description of the incomplete vehicle expressed in the terminology of the industry as an alternative to the description in terms of final use. This method for incomplete vehicle manufacturers has been found acceptable, and the NHTSA accordingly grants this request.

In consideration of the foregoing, the NHTSA adopts amendments to Part 566 of Title 49, Code of Federal Regulations . . . .

*Effective date:* February 1, 1972.

This amendment is issued under the authority of sections 103, 108, 112 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966, 15 U.S.C. 1392, 1397, 1401, 1407, and the delegation of authority at 49 CFR 1.51.

Issued on January 24, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 1364**  
**January 28, 1972**



## PART 566—MANUFACTURER IDENTIFICATION

(Docket No. 71-11; Notice 2)

**§ 566.1 Scope.** This part requires manufacturers of motor vehicles, and of motor vehicle equipment to which a motor vehicle safety standard applies, to submit identifying information and a description of the items they produce.

**§ 566.2 Purpose.** The purpose of this part is to facilitate the regulation of manufacturers under the National Traffic and Motor Vehicle Safety Act, and to aid in establishing a code numbering system for all regulated manufacturers.

**§ 566.3 Application.** This part applies to all manufacturers of motor vehicles, and to manufacturers of motor vehicle equipment, other than tires, to which a motor vehicle safety standard applies (hereafter referred to as "covered equipment").

**§ 566.4 Definitions.** [All terms defined in the Act and the rules and standards issued under its authority are used as defined therein. Specifically, "incomplete vehicle," "intermediate manufacturer," and "final-stage manufacturer" are used as defined in Part 568, Vehicles Manufactured in Two or More Stages. (37 F.R. 1364—January 28, 1972. Effective: 2/1/72)]

**§ 566.5 Requirements.** Each manufacturer of motor vehicles, and each manufacturer of covered equipment, shall furnish the information specified in paragraphs (a) through (c) of this section to: Administrator, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590.

(a) Full individual, partnership, or corporate name of the manufacturer.

(b) Residence address of the manufacturer and State of incorporation if applicable.

(c) Description of each type of motor vehicle or of covered equipment manufactured by the manufacturer, including for motor vehicles,

the approximate ranges of gross vehicle weight ratings for each type.

(1) Except as noted below, the description may be of general types, such as "passenger cars" or "brake fluid."

(2) In the case of multipurpose passenger vehicles, trucks, and trailers, the description shall be specific enough also to indicate the types of use for which the vehicles are intended, such as "tank trailer," "motor home", or "cargo van."

(3) [In the case of motor vehicles produced in two or more stages, if the manufacturer is an incomplete vehicle manufacturer, the description shall so state and include a description indicating the stage of completion of the vehicle and, where known, the types of use for which the vehicle is intended.

**EXAMPLE:** "Incomplete vehicle manufacturer—Chassis-cab intended for completion as van-type truck."

If the manufacturer is an intermediate manufacturer, or a final stage manufacturer, the description shall so state and include a brief description of the work performed.

**EXAMPLE:** "Multipurpose passenger vehicles: Motor homes with GVWR from 8,000 to 12,000 pounds. Final-stage manufacturer—add body to bare chassis."

(37 F.R. 1364—January 28, 1972. Effective: 2/1/72)]

**§ 566.6 Submittal of information.** Each manufacturer required to submit information under § 566.4 shall submit the information not later than February 1, 1972. After that date, each person who begins to manufacture a type of motor vehicle or covered equipment for which he has not submitted the required information

Effective: February 1, 1972

shall submit the information specified in paragraphs (a) through (c) of § 566.4 not later than 30 days after he begins manufacture. Each manufacturer who has submitted required information shall keep his entry current, accurate and

complete by submitting revised information not later than 30 days after the relevant changes in his business occur.

36 F.R. 20977  
November 2, 1971

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## PREAMBLE TO PART 567—CERTIFICATION

Regulations for the certification labeling of motor vehicles and motor vehicle equipment, and the provision of identifying information on the label, were issued under sections 112, 114, and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1401, 1403, 1407) by the Federal Highway Administrator and published in the *Federal Register* on January 24, 1969 (34 F.R. 1147). In a notice published on April 29, 1969, (34 F.R. 7031) it was proposed to make certain amendments to those regulations. This amendment to the regulations is based on that proposal.

The notice proposed that sections 367.7 and 367.8, relating to manufacturers and distributors of motor vehicle equipment, be revoked, pending further study of the distribution patterns and the needs of the motor vehicle equipment industry. No adverse comments to that proposal were received. Those two sections are accordingly being revoked with a view to the future issuance of regulations relating to the particular industries whose products are covered by equipment standards. Manufacturers and distributors of motor vehicle equipment must, however, continue to meet the certification requirements of section 114 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1403) as amplified by notice in the *Federal Register* of November 4, 1967 (32 F.R. 15444).

Clarifying language was proposed by the notice adding the phrase "(except chassis-cabs)" to section 367.4(a), and substituting the phrase "door edge that meets the door latch post" in section 367.4(c). A sentence was proposed for addition to section 367.4(g)(1), requiring the name of a person, other than the manufacturer, who affixes a label on an imported vehicle to be shown on the label. No adverse comments were received on these proposals, and they are incorporated into the rule as issued.

It was proposed to delete the reference to the use of tools in section 367.4(b), so that the subsection would read: "The label shall be permanently affixed in such a manner that it cannot be removed without destroying it." Some comments have indicated uncertainty as to the types of label that are permitted by this section. It is intended that the label be affixed so as not to be removable without damage. The purpose is to make sure that a label cannot be easily and undetectably transferred to another vehicle, and to provide that, within this requirement, manufacturers would have discretion in choice of material and adhesive method. In order to clarify the requirement, the words "or defacing" are inserted after "destroying". Several inquiries were directed specifically to the adequacy of riveted labels. This amendment permits riveting since it has been determined to be a generally satisfactory method of affixing the label.

One comment noted that, particularly in some foreign countries, assembly of a vehicle may be performed by a subsidiary corporation controlled by a parent that is the generally known "nameplate" company. It was suggested that the name of the parent corporation should be allowable on the label. The suggestion has been determined to have merit, in that no important purpose is served by requiring the name of a lesser-known subsidiary corporation on the label, and language permitting the use of a parent corporation's name is added to section 367.4(g)(1).

In order to allow exporting and importing manufacturers to indicate the country to which the word "Federal" refers, a sentence is added to section 367.4(g)(3) permitting the insertion of "U.S." or "U.S.A." before the word "Federal" in the conformity statement.

One petitioner suggested permitting the insertion of the model year before the word "vehicle" in the conformity statement, so that it would read "This 1970 vehicle conforms . . .", in the

case of a vehicle manufactured in late 1969. The requirement of stating the month and year of manufacture on the label is intended to eliminate confusion caused by model years that do not match calendar years, and that may mislead consumers as to the standards that are applicable. The manufacturer or dealer is free to indicate the model year of the vehicle by other labels, or any means that do not involve the certification label, and therefore it is not necessary to allow insertion of this possibly confusing additional date.

Objections were made to the requirement of color contrast on the label, and to the requirement of stating the actual manufacturer's name rather than that of a distributor under a "private brand" label. Similar comments were made and rejected at previous stages of rulemaking. Both of these requirements are important aids to enforcement where rapid inspection of large numbers of vehicles must be made.

One comment suggested that it would be misleading for a manufacturer to certify that the vehicle "conforms" to applicable standards, since the manufacturer has no control over the vehicle after it leaves his hands, and proposed that the certification be limited to the statement that the vehicle conformed at the time it was delivered to a distributor or dealer. The requirement for certification is not, however, limited to manufacturers, but extends to all distributors and importers as well. These parties satisfy this requirement by allowing the certification label to remain affixed to the vehicle. A distributor who alters a vehicle so that it does not conform to the manufacturer's certification must certify that the vehicle as altered meets applicable standards or he is subject to penalties under the Act. A dealer who sells a vehicle after altering it so that it does not conform would be subject to penalties under the Act, and prior parties would not be held responsible for the dealer's alterations. Any alterations that came about after a vehicle had been sold to a user would not be relevant to the question of conformity to applicable standards, as provided by section 108(b)(1) of the Act.

One comment raised the question of who should certify a vehicle such as a boat trailer that is

shipped complete but in unassembled form by its fabricator, such that it can be easily assembled without special equipment. The fabricator obviously has the technical knowledge on which certification should be based, but the subsequent assembler may be viewed as the "manufacturer" of the vehicle within the meaning of the Act. This question is part of the larger area of kits for the assembly of new vehicles or the renovation or alteration of existing ones. It is expected that separate regulations will be issued concerning standards applicable to such assemblers and their certification. As an interim measure, it has been determined that the purposes of the Act would be served by allowing the fabricator the option of treating itself as the certifying manufacturer under section 114 of the Act and affixing the label in a manner such that it will conform when the vehicle is assembled. Language to that effect is added to section 367.4(g)(1).

In section 367.4(e), describing the label location for motorcycles, the words "except the steering system" are added to the final phrase, "in a location such that it is easily readable without moving any part of the vehicle", in order to allow a location on the steering post that may be obscured when the steering system is turned to a certain position.

*Effective date.* Since these amendments do not impose substantial additional burdens relative to the regulations as previously issued, this part as amended shall continue to be effective for all motor vehicles manufactured on or after September 1, 1969.

In consideration of the foregoing, 49 CFR Part 367, Certification, is amended to read as set forth below. This amendment is issued under the authority of sections 112, 114, and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1401, 1403, 1407) and the delegation of authority from the Secretary of Transportation to the Federal Highway Administrator, 49 CFR § 1.4(c).

Issued on July 7, 1969.

F. C. Turner  
Federal Highway Administrator

Sec.			
367.1	Purpose and scope.	367.5	Requirements for manufacturers of chassis-cabs.
367.2	Application.	367.6	Requirements for distributors of motor vehicles.
367.3	Definitions.		
367.4	Requirements for manufacturers of motor vehicles.		34 F.R. 11360 July 9, 1969

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## PREAMBLE TO PART 567—CERTIFICATION

(Dockets No. 70-6, 70-8, and 70-15)

(Revised and reissued April 8, 1971)

This notice adopts a new Part 568 in Title 49, Code of Federal Regulations, to require the furnishing of information relevant to a vehicle's conformity to motor vehicle safety standards, and makes complementary changes in the certification regulations in Part 567 of that title and in Part 571. It also amends the certification regulations with respect to the manufacturer whose name must appear on the label for trailers and with respect to the information that must appear on the label for all vehicles. Notices of proposed rulemaking on these subjects were published on March 17, 1970 (35 F.R. 4639), May 1, 1970 (35 F.R. 6969), and June 13, 1970 (35 F.R. 9293). The comments received in response to these notices, and the statements made at the public meeting on vehicles manufactured in two or more stages (September 18, 1970; 35 F.R. 13139) have been considered in this issuance of a final rule.

The amendments to the certification regulations proposed on May 1, 1970 (35 F.R. 6969) are adopted as proposed, except that GCWR information is not required.

The most frequently stated objection to the amendments was that the providing of GVWR and GAWR for passenger cars gives the purchaser information that is already provided by the label required by Standard No. 110. Although the information is to some extent duplicative, in that if the consumer knew the vehicle's unloaded weight, he could use the information required by Standard No. 110 to estimate the gross vehicle weight, the gross weight information is more easily usable for regulatory pur-

poses. Requirements of certain standards may in the future apply to a passenger car according to its weight class.

Several comments stated that the inclusion of weight information on the certification label would make the labels awkwardly large. Since only two items would be added to the label, these comments are considered to be without merit.

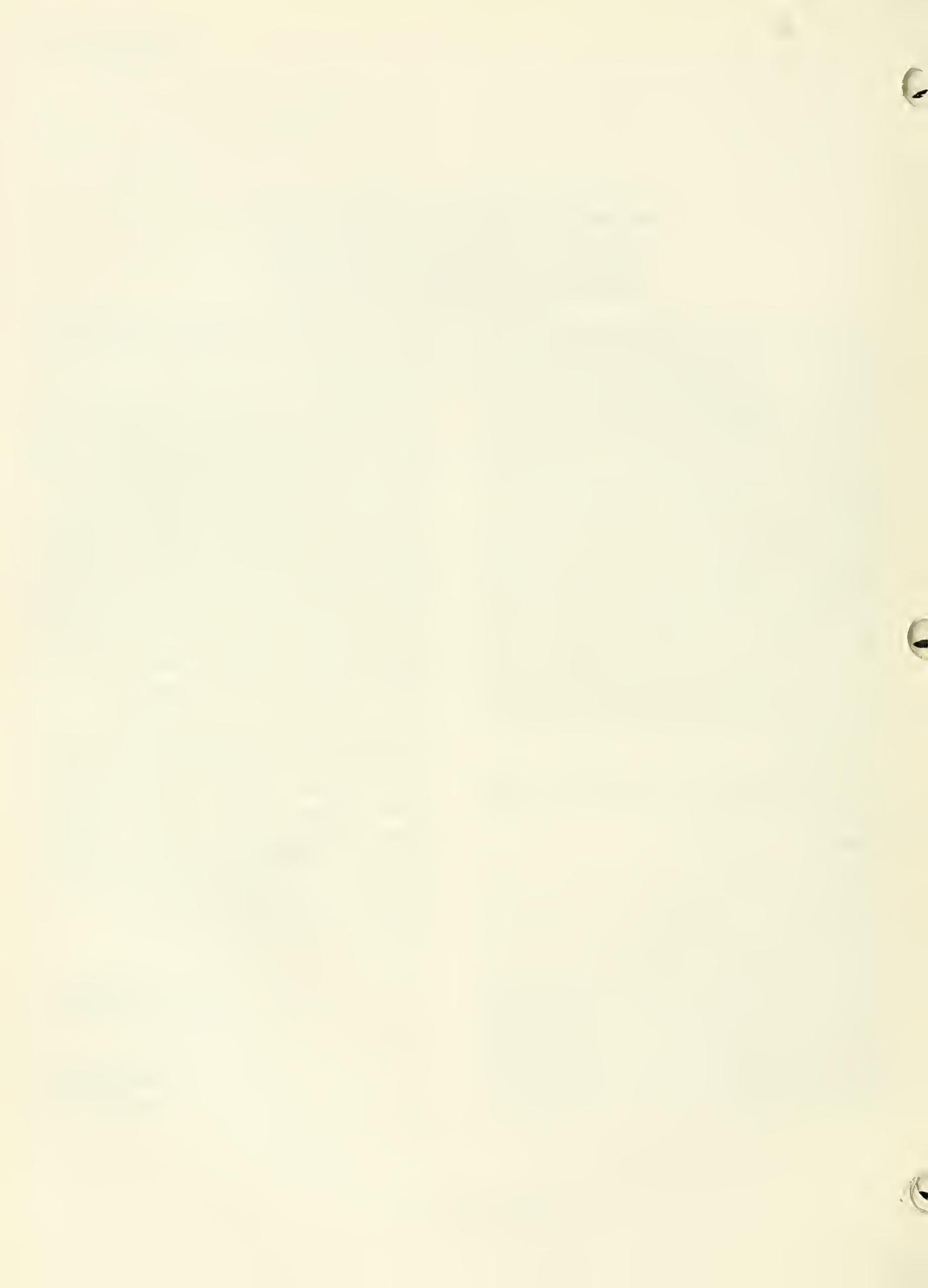
As amended, the regulation requires a certification label on vehicles sold directly to users, as well as on those sold to dealers and distributors. The Administration regards this as useful to the consumer and necessary to efficient, enforcement of the standards. The authority for requiring information labels is found in sections 112 and 119 of the Act, as well as in section 114.

The requirements for the certification label for multi-stage vehicles, discussed above, include the vehicle type. Under Part 567 as presently in force, the type need only be shown for multi-purpose passenger vehicles. This information has been determined to be useful for enforcement and other information purposes, and Part 567 is therefore hereby amended to require the vehicle type to appear on all labels.

Issued on April 8, 1971.

Douglas W. Toms  
Acting Administrator

36 F.R. 7054  
April 14, 1971



## PREAMBLE TO AMENDMENT TO PART 567—CERTIFICATION

and

(Denial of Petitions to Part 568—Vehicles Manufactured in Two or More Stages)

(Docket No. 70-8)

Part 567 of Title 49, Code of Federal Regulations, certification requirements for motor vehicles, as amended, and Part 568, establishing requirements for vehicles manufactured in two or more stages, were published on April 14, 1971 (36 F.R. 7054 *et seq.*). Thereafter, pursuant to 49 CFR 553.35 (35 F.R. 5119), petitions for reconsideration were filed by American Motors Corporation, Chrysler Corporation, Ford Motor Company, General Motors Corporation, and International Harvester Company. On June 22, 1971, a notice proposing the addition of a vehicle identification number to the certification label required for vehicles manufactured in two or more stages was published in the *Federal Register* (Docket No. 71-14; Notice 1, 36 F.R. 11868).

This notice of Reconsideration and Amendment represents the action taken by this agency in response to the petitions and the notice of June 22.

1. *Effective date.* Ford and International Harvester petitioned that the effective date of Part 568 be delayed at least until July 1, 1972, to permit a more orderly development and implementation of systems and procedures pertaining to the documentation requirements of the regulation. Neither petitioner has argued that it is impossible or impracticable for it to comply with Part 568 by January 1, 1972, nor has any other petition been received on this subject. Timely implementation of these regulations is important, because of the need to have the required information in the hands of final-stage manufacturers in advance of the effective date of standards applicable to these types of vehicles. The Administrator therefore has denied the petitions for extension of the effective date.

1. *GVWR; GAWR.* International Harvester stated that if an incomplete vehicle manufacturer installs tires supplied by the customer or ships the vehicle with temporary tires that will be replaced by the customer, the manufacturer should be permitted to base his GVWR and GAWR ratings on the capacity of the vehicle's structure and to disregard the capacity of customer-installed tires. The company therefore requested an interpretation, or revision, of the regulation to exclude tire ratings in the computation of GAWR and GVWR, so long as the exclusion is indicated on the certification label or the document furnished to the final-stage manufacturer.

The NHTSA cannot accept the position that the weight ratings should not be related to the tires on the vehicle. To the contrary, the newly proposed motor vehicle safety standard on Tire and Rim Selection and Rim Performance for vehicles other than passenger cars (36 F.R. 14273, August 3, 1971) would require each completed vehicle to have tires whose load ratings reflect the gross axle weight ratings of the vehicle. If an incomplete vehicle manufacturer installs tires that are intended to be used on the vehicle as completed (whether or not they are "supplied by the customer"), the weight ratings of the vehicle should reflect the capacities of those tires. On the other hand, it is entirely permissible for an incomplete vehicle manufacturer to install "temporary" tires for shipment purposes only, if he provides full information on the subject in the document required to be furnished with the incomplete vehicle under Part 568.

Counsel for the Trailer Manufacturers Association have pointed out that some trailer manufacturers provide different sizes of tires as a customer

option, and have requested permission to state different weight rating values on the label for each tire size that is offered. This request may have merit, since it may not be practicable in some cases for a manufacturer to anticipate which tires will be used on a particular vehicle, or to rely on dealers to affix permanent labels that reflect the tires ultimately selected. A notice of proposed rulemaking that would allow manufacturers to provide several values for GVWR and GAWR, along with tire sizes for each, is published in this issue of the *Federal Register*.

American Motors petitioned for withdrawal of GVWR and GAWR from passenger car certification labels on the grounds that the terms are ambiguous and misleading. Ford also petitioned for a change in the GAWR-GVWR usage, stating that the present placard required on passenger cars by Standard No. 110 makes GAWR and GVWR unnecessary for passenger cars and that a similar reference to vehicle capacity weight should be substituted for GAWR and GVWR in the documents and labels required on multi-purpose passenger vehicles, trucks, and buses. American interprets GVWR to be the equivalent of maximum loaded vehicle weight, as well as the equivalent of the sum of unloaded vehicle weight and vehicle capacity weight.

The definitions of gross vehicle weight rating and gross axle weight rating have been developed in order to provide useful and reasonably flexible methods for manufacturers to rate the overall capacities of their vehicles and axle systems respectively, on the basis of which the vehicles will be tested for conformity to various standards. The existing concept of "maximum loaded vehicle weight" has been found deficient for some purposes, because it relies on a complex definition of "curb weight" (found in Standard No. 110, 49 CFR 571.21) that combines both arbitrary and specific elements. It is this agency's intent to allow manufacturers, in stating GVWR and GAWR, to select values that represent the overall performance capabilities of their vehicles as delivered, without necessarily varying the values to allow for minor weight variations in a particular line of vehicles. To preclude the possibility of understating a vehicle's GVWR, however, the certification regulation is herewith amended to

provide that the stated GVWR shall not be less than the sum of unloaded vehicle weight, rated cargo load, and 150 pounds times the vehicle's designated seating capacity.

3. *Certification responsibility of the incomplete vehicle manufacturer.* General Motors has petitioned for a revision of Part 568 that would "distinguish between final-stage manufacturers who merely add a van or a work unit to the rear of a chassis-cab, and those manufacturers who perform material alterations to the incomplete vehicle in the process of manufacturing a completed vehicle." In the former case, under the GM scheme, the incomplete vehicle manufacturer would certify that the vehicles complied with all Federal standards except those (such as No. 108) where final compliance depends upon the work performed by the add-on type manufacturers. The latter would then certify that he had made no alterations to the incomplete vehicle other than \_\_\_\_\_ (describing the work performed), and that the vehicle complied with \_\_\_\_\_ (standards not certified by the incomplete vehicle manufacturer). GM believes that the incomplete vehicle manufacturer could be required by regulation to provide specific items of information about its product (e.g., maximum height of center of gravity, regarding Standard No. 105) to enable the final-stage manufacturer to add a van or work unit without causing a nonconformity. In the second case, under the GM scheme, the material-alteration type manufacturer would certify the entire vehicle, and could obtain from the incomplete vehicle manufacturer all data needed for certification.

There is considerable similarity between the GM scheme and Part 568. The manufacturer of a vehicle complete except for the addition of a van or work unit, under Part 568, provides a statement (568.4(a)(7)(i)) that the vehicle when completed will conform to specified standards if no alterations are made in identified components of the incomplete vehicle. He also provides an appropriate statement, according to 568.4(a)(7)(ii) or (iii), as to the remaining standards. On the basis of such statements, and the work he performs, the final stage manufacturer certifies the complete vehicle.

The primary difficulty with the GM scheme is that it is not adequate for such standards as No. 121, *Air Brake Systems*, where end conformance depends upon work performed by both the incomplete vehicle and final-stage manufacturers. GM would not, in that instance, certify conformance as to Standard No. 121, nor would it provide information sufficient for the final-stage manufacturer to produce a conforming vehicle. The scheme with respect to material-alteration type manufacturers as well would not appear to provide as much assistance to final-stage manufacturers as that adopted under Part 568. Traditionally, the final-stage manufacturer is an entity whose resources are limited. The thrust of Part 568 is to place some legal responsibility on the incomplete vehicle manufacturer to supply the final-stage manufacturer with data and conditions under which the completed vehicle will comply, and most importantly, to allocate a fair share of the legal responsibility for conformity to the incomplete vehicle manufacturer. GM's petition is therefore denied.

Chrysler also wishes to split the certification responsibility, and petitioned for an amendment requiring the incomplete vehicle manufacturer to "list . . . only those standards to which full compliance has been achieved . . ." Otherwise, Chrysler feels it has no alternative other than periodic use of the general statement allowed by § 568.4(a)(7)(iii) that conformity with a standard is not substantially determined by the design of the incomplete vehicle, and that the incomplete vehicle manufacturer makes no representation as to conformity of the incomplete vehicle with such standard.

Since alternative (iii), above, is partially a factual representation, Chrysler may not provide such a statement where conformance with a standard is substantially determined by the design of the incomplete vehicle. It is up to the

incomplete vehicle manufacturer to decide which type of statement accurately reflects the condition of compliance, and Chrysler may use the general statement in those instances where it is appropriate. Chrysler's petition is therefore denied.

4. *Sequence of required data.* Ford petitioned that Part 567 be amended to make the sequence of the data required on certification labels permanently affixed to completed vehicles consistent with that on the document to be supplied by incomplete vehicle manufacturers (Part 568). Ford's reason for this request is that it would simplify computer print-out of material if the same computer program could be used for both requirements.

Although this request has some technical merit, Ford is the only manufacturer who has commented on variances in data sequence. This agency understands that other manufacturers have already ordered certification labels printed in the sequence required by Part 567, and deems it unfair to them to amend Part 567 at this time. Ford's request is therefore denied.

5. *Proposed VIN.* There were no objections to the proposal that a vehicle identification number be required for labels on vehicles manufactured in two or more stages, and the proposal is adopted.

In consideration of the foregoing changes are made in 49 CFR Part 567.

*Effective date:* January 1, 1972.

Issued on October 6, 1971.

Douglas W. Toms  
Administrator

36 F.R. 19593  
October 8, 1971



## PREAMBLE TO AMENDMENT TO PART 567—CERTIFICATION

(Docket No. 70-8; Notice 5)

This notice amends the Certification Regulations to allow vehicle manufacturers to list on the certification label more than one set of values for gross vehicle and gross axle weight ratings. It also allows school bus manufacturers to compute the vehicle's GVWR using 120 pounds to represent the weight of an occupant.

On April 14, 1971, (36 F.R. 7054), the certification regulations (49 CFR Part 567) were amended to provide for the furnishing of additional information on the certification label, and a new Part 568, "Vehicles Manufactured in Two or More Stages", was established. On October 8, 1971, (36 F.R. 9593) certain amendments to Part 567 and Part 568 were issued in response to petitions for reconsideration received concerning the amendment of April 14, 1971. Also on October 8, 1971, a notice was issued (36 F.R. 19617) proposing to allow multiple GVWR and GAWR listings to be used in certain circumstances. This notice is issued in response to petitions for reconsideration concerning the amendment of October 8, 1971, and comments concerning the notice of proposed rulemaking of that date.

The proposal of October 8, 1971, allowing multiple GVWR and GAWR listings to be placed on the certification label is adopted as proposed. Comments received by the NHTSA were generally in favor of this amendment. One commentator stated that the proposal would not be practical for large trucks. However, the requirement is only permissive, and it will provide a useful alternative to manufacturers of various other types of vehicles. It is therefore adopted as proposed.

The final rule published in the October 8 notice amended sections 567.4(g)(3) and 567.5(a)(5) to provide for GVWR computation using a multiplier of 150 pounds times the vehicle's designated seating capacity. This agency has received petitions for reconsideration of this

provision from the School Bus Manufacturers Institute and Blue Bird Body Company. Both suggested that the figure of 150 pounds is unrealistically high, because the maximum seating capacity of a school bus is based on three children sitting on each standard 39-inch seat. These petitions suggested that a 120-pound figure, found in the 1970 Revised Edition of *Minimum Standards for School Buses*, be used in computing the GVWR of school buses. The NHTSA agrees with these petitions, and the regulation is amended accordingly.

It has been brought to the attention of the NHTSA that on some vehicles it will be difficult to affix the required label in the designated location, because of space limitations. It was requested that the use of a multi-column label or a label in two parts be considered permissible under the regulation. One such request was answered in a letter interpretation to counsel for the Trailer Manufacturers Association, dated November 3, 1971. The substance of the agency's reply is repeated here for the benefit of all interested parties: The NHTSA adheres to the requirement in the certification regulation that the required information be listed "in the order shown," a requirement that since its issuance in September 1969 has been found to enhance the readability and usefulness of the label. However, there is no requirement that the listing be in one column, and as long as it appears in the order specified, multi-column labels or adjacent labels in two or more parts are permitted.

Some inquiries were received concerning the significance of the requirement for a vehicle identification number on the label of a vehicle manufactured in two or more stages (36 F.R. 19593, October 8, 1971). This VIN requirement is not new, as some persons apparently believed, but merely a continuation of the requirement contained in the original certification regulations

Effective: January 1, 1972

effective September 1, 1969 (34 F.R. 11360, July 9, 1969). The VIN requirement is not intended to change existing practices with respect to vehicle numbering.

In consideration of the foregoing, Part 567 of Title 49, Code of Federal Regulations, is hereby amended . . . .

*Effective date:* As these requirements impose no additional burdens on any person, and as implementation of these requirements as part of the general regulatory scheme is essential, good cause exists for an effective date less than 30 days from the day of publication. The amendments are accordingly effective on January 1, 1972.

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This notice is issued pursuant to Sections 103, 112, 114, and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1401, 1403, 1407), and the delegation of authority at 49 CFR 1.51.

Issued on December 8, 1971.

Charles H. Hartman  
Acting Administrator

**36 F.R. 23571**  
**December 10, 1971**

## PREAMBLE TO AMENDMENT TO PART 567—CERTIFICATION

(Docket No. 70-8; Notice 7)

The purpose of this notice is to allow manufacturers to specify a tire size on their certification label when they provide only one gross vehicle weight rating, or one gross axle weight rating for each axle, and do not list other optional tire sizes. The provisions of the Certification regulations dealing with gross vehicle weight rating and gross axle weight rating were published April 14, 1971 (36 F.R. 7054), and were amended on October 8, 1971 (36 F.R. 19593) and December 10, 1971 (36 F.R. 23572). In addition, the definition of gross axle weight rating (49 CFR 571.3) was amended February 12, 1972 (37 F.R. 3185).

As issued on April 14, 1971, the certification regulations required each manufacturer (final-stage manufacturers in the case of multi-stage vehicles) to include on his certification label a gross vehicle weight rating, and a gross axle weight rating for each axle. The assigned rating was to be made without reference to particular tires or other components on which the value was based. The amendment of December 10, 1971, modified this result to some extent by allowing a manufacturer, at his option, to list different weight ratings for various tire sizes, with the appropriate tire size listed for each rating.

In response to inquiries by interested persons, the agency has decided not to limit this option to cases of multiple tire sizes. By the amendment issued herewith, manufacturers are allowed

to list the appropriate tire size for both gross vehicle and axle weight ratings, even when only one rating is provided. With this information, subsequent manufacturers, distributors, dealers, and users who install or replace tires will be put on notice that the tires they mount on the vehicle might affect the weight ratings provided by the manufacturer.

This amendment also makes a minor correction in a paragraph reference in the regulations.

In light of the above, 49 CFR Part 567, "Certification," is amended . . .

*Effective date:* July 13, 1972.

As this amendment provides an optional method of compliance and imposes no additional burdens, it is found for good cause shown that an effective date less than 30 days from the day of issuance is in the public interest.

This notice is issued under the authority of sections 103, 112, 114, and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1401, 1403, 1407, and the delegation of authority at 49 CFR 1.51.

Issued on July 6, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 13696**  
**July 13, 1972**



**PREAMBLE TO AMENDMENT TO PART 567—CERTIFICATION****(Docket No. 72-27; Notice 2)**

This notice establishes certification and labeling responsibilities for persons who alter "completed vehicles" after their certification as conforming to applicable motor vehicle safety standards. The requirements are based on those proposed in a notice of proposed rulemaking published October 25, 1972 (37 F.R. 22800).

Under the new requirements, a person who alters a completed vehicle, other than by the attachment, substitution, or removal of "readily attachable components", will be required to ascertain conformity to all applicable standards as of any date between the manufacture date of the completed vehicle and the manufacture date of the altered vehicle. That person will be required to affix a label (leaving the certification label in place) that identifies the alterer, the date of alteration, the date as of which conformity is determined, and any changes the alteration produces in either gross weight ratings or vehicle classification. A person who does not alter the vehicle, or who adds, substitutes, or removes only readily attachable components will be required to leave the certification label in place, but will not be required, unless the alteration invalidates the stated weight ratings, to provide an additional label. Distributors who do not alter the vehicle, or who alter it using only readily attachable components and do not invalidate the stated weight ratings will meet the certification requirements by leaving the certification label in place. The requirements will place persons who alter completed vehicles on the same basis as final-stage manufacturers, by allowing the former to choose as the date by which vehicle conformity is determined any date between the date on which the completed vehicle is manufactured and the date on which the vehicle is altered. Under previously existing statutory and regulatory provisions, alterers of vehicles were required to use

only the date of completion of the altered vehicle as the date by which conformity could be determined.

General Motors, Truck Body and Equipment Association, and Stutz Motor Car of America supported the proposal without qualification. Other comments generally approved the proposal with some suggested changes.

Several comments argued that the limiting concept of "readily attachable components", the addition, removal, or substitution of which does not create a requirement to affix a label, should not include "mirrors or tire and rim assemblies", as the language appears in §§ 567.6 and .7, and § 568.8. It was argued that these items directly affect the vehicle's conformity to the standards or the weight ratings, and should therefore not be alterable without, in effect, a recertification by the alterer. It was variously suggested that explicit inclusion of these items as examples of readily attachable components might cause a safety problem, a false certification, or a misleading of persons such as dealers as to their responsibilities under the Act and the standards.

The NHTSA does not accept these arguments. The provisions for alteration of vehicles, like the larger certification scheme of which they are a part, are intended to reflect the realities of manufacture and distribution. It is a fact that the substitution of tires by a dealer takes place in a substantial fraction of all vehicle sales. Moreover, a large proportion of the components that are in fact frequently altered at the dealer level are directly affected by standards: mirrors, tires, rims, lighting accessories, bumper guards and attachments, windshield wipers and washers, hub caps and wheel nuts, seat belts, and interior components such as air conditioners or radios that come within the head impact area, to name

a few. If these items were not included in the concept of readily attachable components, for which an alteration label is not required, it is safe to say that virtually every dealer in the country would be affixing labels to many of the vehicles he sold.

It was not the intent of this agency to create such a manifold expansion of labeling requirements. The altered-vehicle label is designed primarily to reach those cases where a completed vehicle is significantly altered, in a manner, and with components, not provided by the original manufacturer. The substitution or addition of parts such as tires, rims, and mirrors is a routine aspect of typical vehicle distribution systems, and the cost burden of affixing a permanent label to the vehicle has not been found to be justified in that situation. For these reasons the language of the regulation has in these respects been retained as proposed.

The requirement to keep a vehicle in conformity to the standards and the weight ratings applies throughout the chain of distribution regardless of any labeling requirements, and this agency has no intent of downgrading the importance of that requirement. The comments did reveal a justifiable concern of manufacturers for situations where the vehicle might be altered, as by substitution of tires, in a way that its stated weight ratings are no longer valid. Also, there may well be cases where a customer wants a vehicle to have lighter components for its intended purpose, and would accept lowered weight ratings. To deal with these cases, language has been added to sections 567.6 and .7, and 568.8, to require the affixing of an alteration label whenever any type of alteration is made that would invalidate the stated weight ratings.

American Motors and Jeep argued that requiring alterers to certify conformity discriminates against manufacturers' dealers. They pointed out that dealers, who generally alter vehicles before sale, are required to maintain conformity, while aftermarket installers of equipment, because the additions they make are to "used" vehicles, need not. They suggested that "special add-on accessories" be excepted from the requirements, that a new category of "Special Motorized Equipment" be created to which some

of the standards would not apply, that equipment standards be issued to cover aftermarket installers, and that highway safety program standards prohibit the alteration of vehicles such that they would not conform to the standards. These comments are not, in the view of this agency, within the scope of the rulemaking. Requests of this nature should be submitted as petitions for rulemaking, with supporting data, in accordance with the procedures of 49 CFR Part 553.

British Leyland suggested that an exemption to the labeling requirements be made for persons installing accessories which the original vehicle manufacturer makes available, and whose installation he knows will not affect vehicle conformity. The NHTSA expects that most accessories meeting this description will be readily attachable within the sense of the regulation, and no further labeling in these cases will be required. It should be noted that the category of "readily attachable components" cannot be sharply defined, and in any marginal case the NHTSA will accept the reasonable judgment of the parties concerned, especially where the original manufacturer and the alterer are in agreement. In cases where components of this type are not found to be readily attachable, the burden on the alterer to determine that the alteration does not destroy conformity is minimized, leaving him with essentially no more than the attachment of the alterer label.

Certain comments pointed out that while proposed sections 567.7 and 568.8 are not limited in their application to distributors, that limitation had been retained in section 567.6. The comments suggested that, as sections 567.7 and 568.8 applied to dealers, section 567.6 should likewise so apply. The substance of the suggestion has been adopted in the final rule, by modifying § 567.6 to apply to any person.

The Recreation Vehicle Institute (RVI) suggested that manufacturers of completed vehicles be required to supply a document when requested by a vehicle alterer, similar to that provided final-stage manufacturers, that advises alterers how to achieve or retain conformity. This suggestion has not been adopted. If a vehicle manufacturer wishes to provide information on the

alteration of his vehicles, he of course may do so. Once a completed, certified vehicle has been produced, however, the NHTSA does not believe it reasonable to require manufacturers to provide persons who might alter that vehicle with additional certification information. The requirement to provide information concerning incomplete vehicles (Part 568) is founded on the fact that an incomplete vehicle manufacturer has marketed his vehicles with the express intent of having them completed by other persons. This is not the case with completed vehicles.

RVI also suggested that the regulation specifically provide that alterers be allowed to base their conclusions as to conformity on the original certification. The NHTSA does not consider such a provision to be meaningful. The extent to which the alterer's conformity assurance may be based on the original certification depends entirely on what the alterer does to the vehicle, which is a fact peculiarly within his knowledge.

Certain comments suggested that compliance with the requirements be permitted before the

specified effective date. The NHTSA believes this request to be meritorious. Alterers will be able to conform to existing requirements or to those issued by this notice at any time up to the effective date.

In light of the above, amendments are made to 49 CFR Parts 567 and 568 . . . .

*Effective date:* February 1, 1974. However, persons who alter vehicles may at any time before that date conform to the provisions issued in this notice in lieu of existing provisions of 49 CFR Parts 567 and 568.

Sections 103, 112, 114, 119, Pub. L. 89-563, 80 Stat. 718; 15 U.S.C. 1392, 1401, 1403, 1407; delegation of authority at 38 F.R. 12147.

Issued on June 13, 1973.

James E. Wilson  
Associate Administrator  
Traffic Safety Programs

**38 F.R. 15961**

**June 19, 1973**



**PART 567—CERTIFICATION**  
**(Dockets No. 70-6, 70-8, and 70-15)**  
**(Revised and reissued April 8, 1971)**

**§ 567.1 Purpose and scope.**

The purpose of this part is to specify the content and location of, and other requirements for, the label or tag to be affixed to motor vehicles required by section 114 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1403) ("the Act") and to provide the consumer with information to assist him in determining which of the Federal Motor Vehicle Safety Standards (Part 571 of this chapter) ("Standards") are applicable to the vehicle.

**§ 567.2 Application.**

(a) This part applies to manufacturers and distributors of motor vehicles to which one or more standards are applicable.

(b) In the case of imported motor vehicles, the requirement of affixing a label or tag applies to importers of vehicles, admitted to the United States under § 12.80(b)(2) of the joint regulations for importation of motor vehicles and equipment (19 CFR 12.80(b)(2)) to which the required label or tag is not affixed.

**§ 567.3 Definitions.**

All terms that are defined in the Act and the rules and standards issued under its authority are used as defined therein.

**§ 567.4 Requirements for manufacturers of motor vehicles.**

(a) Each manufacturer of motor vehicles (except vehicles manufactured in two or more stages) shall affix to each vehicle a label, of the type and in the manner described below, containing the statements specified in paragraph (g) of this section.

(b) The label shall, unless riveted, be permanently affixed in such a manner that it cannot be removed without destroying or defacing it.

(c) Except for trailers and motorcycles, the label shall be affixed to either the hinge pillar, door-latch post, or the door edge that meets the door-latch post, next to the driver's seating position, or if none of these locations is practicable, to the left side of the instrument panel. If none of these locations is practicable, notification of that fact, together with drawings or photographs showing a suggested alternate location in the same general area, shall be submitted for approval to the Administrator, National Highway Traffic Safety Administration, Washington, D.C. 20590. The location of the label shall be such that it is easily readable without moving any part of the vehicle except an outer door.

(d) The label for trailers shall be affixed to a location on the forward half of the left side, such that it is easily readable from outside the vehicle without moving any part of the vehicle.

(e) The label for motorcycles shall be affixed to a permanent member of the vehicle as close as is practicable to the intersection of the steering post with the handle bars, in a location such that it is easily readable without moving any part of the vehicle except the steering system.

(f) The lettering on the label shall be of a color that contrasts with the background of the label.

(g) The label shall contain the following statements, in the English language, lettered in block capitals and numerals not less than three thirty-seconds of an inch high, in the order shown:

(1) Name of manufacturer: Except as provided in (i), (ii), and (iii) below, the full corporate or individual name of the actual assembler of the vehicle shall be spelled out, except that such abbreviations as "Co." or "Inc."

and their foreign equivalents, and the first and middle initials of individuals, may be used. The name of the manufacturer shall be preceded by the words "Manufactured By" or "Mfd By". In the case of imported vehicles, where the label required by this section is affixed by a person other than the final assembler of the vehicle, the corporate or individual name of the person affixing the label shall also be placed on the label in the manner described in this paragraph, directly below the name of the final assembler.

(i) If a vehicle is assembled by a corporation that is controlled by another corporation that assumes responsibility for conformity with the standards, the name of the controlling corporation may be used.

(ii) If a vehicle is fabricated and delivered in complete but unassembled form, such that it is designed to be assembled without special machinery or tools, the fabricator of the vehicle may affix the label and name itself as the manufacturer for the purposes of this section.

(iii) If a trailer is sold by a person who is not its manufacturer, but who is engaged in the manufacture of trailers and assumes legal responsibility for all duties and liabilities imposed by the Act with respect to that trailer, the name of that person may appear on the label as the manufacturer. In such a case the name shall be preceded by the words "Responsible Manufacturer" or "Resp Mfr."

(2) Month and year of manufacture: This shall be the time during which work was completed at the place of main assembly of the vehicle. It may be spelled out, as "June 1970", or expressed in numerals, as "6/70."

[(3) "**GROSS VEHICLE WEIGHT RATING**" or "**GVWR**" followed by the appropriate value in pounds, which shall not be less than the sum of the unloaded vehicle weight, rated cargo load, and 150 pounds times the vehicle's designated seating capacity. However, for school buses the minimum occupant weight allowance shall be 120 pounds. (36 F.R. 23571—December 10, 1971. Effective: January 1, 1972)]

(4) "Gross Axle Weight Rating" or "GAWR," followed by the appropriate value in pounds for each axle, identified in order from front to rear (*e.g.*, front, first intermediate, second intermediate, rear).

(5) The statement: **THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.** The expression "U.S." or "U.S.A." may be inserted before the word "**FEDERAL.**"

(6) Vehicle identification number.

(7) The type classification of the vehicle as defined in § 571.3 of Title 49 of the Code of Federal Regulations (*e.g.*, truck, MPV, bus, trailer).

[(h) In cases where different tire sizes are offered as a customer option, a manufacturer may at his option list more than one set of values for GVWR and GAWR, in response to the requirements of subparagraphs (g)(3) and (4) of this section. If the label shows more than one set of weight rating values, each value shall be followed by the phrase "with \_\_\_\_\_ tires," inserting the proper tire size designations. [A manufacturer may at his option list one or more tire sizes where only one set of weight ratings is provided. (37 F.R. 13696—July 13, 1972. Effective 7/13/72)]

*Example:*

GVWR:

800 with 7.00x15LT(D) tires.  
11000 with 8.25x16LT(E) tires.

GAWR:

Front—4080 with 7.00x15LT(D) tires.  
5920 with 8.25x16LT(E) tires.  
Rear—4080 with 7.00x15LT(D) tires.  
5920 with 8.25x16LT(E) tires.

(36 F.R. 23571—December 10, 1971. Effective: January 1, 1972)]

**§ 567.5 Requirements for manufacturers of vehicles manufactured in two or more stages.**

(a) Except as provided in paragraphs (c) and (d) of this section, each final-stage manufacturer,

as defined in § 568.3 of Title 49 of the Code of Federal Regulations, of a vehicle manufactured in two or more stages shall affix to each vehicle a label, of the type and in the manner and form described in § 567.4 of this part, containing the following statements:

(1) Name of final-stage manufacturer, preceded by the words "MANUFACTURED BY" or "MFD BY."

(2) Month and year in which final-stage manufacturer is completed. This may be spelled out as "JUNE 1970" or expressed in numerals as "6/70." No preface is required.

(3) Name of original manufacturer of the incomplete vehicle, preceded by the words "INCOMPLETE VEHICLE MANUFACTURED BY" or "INC VEH MFD BY."

(4) Month and year in which the original manufacturer of the incomplete vehicle performed his last manufacturing operation on the incomplete vehicle, in the same form as (2) above.

[(5) "GROSS VEHICLE WEIGHT RATING" or "GVWR" followed by the appropriate value in pounds, which shall not be less than the sum of the unloaded vehicle weight, rated cargo load, and 150 pounds times the vehicle's designated seating capacity. However, for school buses the minimum occupant weight allowance shall be 120 pounds. (36 F.R. 23571—December 10, 1971. Effective: January 1, 1972)]

(6) "GROSS AXLE WEIGHT RATING" or "GAWR," followed by the appropriate value in pounds for each axle, identified in order from front to rear (*e.g.*, front, first intermediate, second intermediate, rear).

(7) The statement: "THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT IN [month, year]." The date shown shall be no earlier than the manufacturing date of the incomplete vehicle, and no later than the date of completion of final-stage manufacture.

[(8) "VEHICLE IDENTIFICATION NUMBER" (36 F.R. 19593—October 8, 1971)]

(9) The type classification of the vehicle as defined in § 571.3 of Title 49 of the Code of

Federal Regulations (*e.g.*, truck, MPV, bus, trailer.)

[(b) More than one set of figures for GVWR and GAWR, and one or more tire sizes, may be listed in satisfaction of the requirements of paragraphs (a)(5) and (6) of this section, as provided in § 567.4(h). (37 F.R. 13696—July 13, 1972. Effective 7/13/72)]

(c) If an incomplete vehicle manufacturer assumes legal responsibility for all duties and liabilities imposed by the Act, with respect to the vehicle as finally manufactured, the incomplete vehicle manufacturer shall ensure that a label is affixed to the final vehicle in conformity with paragraph (a) of this section, except that the name of the incomplete vehicle manufacturer shall appear instead of the name of the final-stage manufacturer after the words "MANUFACTURED BY" or "MFD BY" required by subparagraph (a)(1) of this section, the additional manufacturer's name required by subparagraph (a)(3) of this section shall be omitted, and the date required by subparagraph (a)(4) of this section shall be preceded by the words "INCOMPLETE VEHICLE MANUFACTURED" or "INC VEH MFD."

(d) If an intermediate manufacturer of a vehicle assumes legal responsibility for all duties and liabilities imposed on manufacturers by the Act, with respect to the vehicle as finally manufactured, the intermediate manufacturer shall ensure that a label is affixed to the final vehicle in conformity with paragraph (a) of this section, except that the name of the intermediate manufacturer shall appear instead of the name of the final-stage manufacturer after the words "MANUFACTURED BY" or "MFD BY" required by subparagraph (a)(1) of this section.

**§ 567.6 [Requirements for persons who do not alter certified vehicles or do so with readily attachable components.]**

A person who does not alter a motor vehicle or who alters such a vehicle only by the addition, substitution, or removal of readily attachable components such as mirrors or tire and rim assemblies, or minor finishing operations such as painting, in such a manner that the vehicle's stated weight ratings are still valid, need not

affix a label to the vehicle, but shall allow a manufacturer's label that conforms to the requirements of this part to remain affixed to the vehicle. If such a person is a distributor of the motor vehicle, allowing the manufacturer's label to remain affixed to the vehicle shall satisfy the distributor's certification requirements under the Act. (38 F.R. 15961—June 19, 1973. Effective: 2/1/74)】

**【§ 567.7 Requirements for persons who alter certified vehicles.**

A person who alters a vehicle that has previously been certified in accordance with § 567.4 or § 567.5, other than by the addition, substitution, or removal of readily attachable components such as mirrors or tire and rim assemblies, or minor finishing operations such as painting, or who alters the vehicle in such a manner that its stated weight ratings are no longer valid, before the first purchase of the vehicle in good faith for purposes other than resale, shall allow the original certification label to remain on the vehicle, and shall affix to the vehicle an additional label

of the type and in the manner and form described in § 567.4, containing the following information:

(a) The statement: "This vehicle was altered by (individual or corporate name) in (month and year in which alterations were completed) and as altered it conforms to all applicable Federal Motor Vehicle Safety Standards in effect in (month, year)." The second date shall be no earlier than the manufacturing date of the original vehicle, and no later than the date alterations were completed.

(b) If the gross vehicle weight rating or any of the gross axle weight ratings of the vehicle as altered are different from those shown on the original certification label, the modified values shall be provided in the form specified in §§ 567.4(g)(3) and (4).

(c) If the vehicle as altered has a different type classification from that shown on the original certification label, the type as modified shall be provided. (38 F.R. 15961—June 19, 1973. Effective: 2/1/74)】

**36 F.R. 7054  
April 14, 1971**

**PREAMBLE TO PART 568—VEHICLES MANUFACTURED IN TWO OR MORE STAGES**  
**(Dockets No. 70-6, 70-8, and 70-15)**

This notice adopts a new Part 568 in Title 49, Code of Federal Regulations, to require the furnishing of information relevant to a vehicle's conformity to motor vehicle safety standards, and makes complementary changes in the certification regulations in Part 567 of that title and in Part 571. It also amends the certification regulations with respect to the manufacturer whose name must appear on the label for trailers and with respect to the information that must appear on the label for all vehicles. Notices of proposed rulemaking on these subjects were published on March 17, 1970 (35 F.R. 4639), May 1, 1970 (35 F.R. 6969), and June 13, 1970 (35 F.R. 9293). The comments received in response to these notices, and the statements made at the public meeting on vehicles manufactured in two or more stages (September 18, 1970; 35 F.R. 13139) have been considered in this issuance of a final rule.

In adopting the new Part 568, *Vehicles Manufactured in Two or More Stages*, in a form similar to that proposed in the March 17 notice, the Administration has determined that there is a need to regulate the relationships between manufacturers of multi-stage vehicles to the extent those relationships affect the conformity of the final vehicle to the motor vehicle safety standards, and that the regulation will meet this need with a minimum disruption of established industry practices. Comments received from persons who would occupy the positions of intermediate and final-stage manufacturers were substantially in favor of the proposal.

The definitions by which the regulation establishes the categories of "incomplete vehicle," "completed vehicle," and the three categories of vehicle manufacturers provide a framework within which each may categorize himself and his products. Of necessity, the definitions are

broad and may not clearly define individual situations. The primary distinction between the incomplete vehicle and the completed vehicle is whether the vehicle can perform its intended function without further manufacturing operations other than the addition of readily attachable components or minor finishing operations. The comments indicated there may sometimes be a close question as to whether or not a missing component is "readily attachable." How the question is answered may determine the vehicle's status as a "completed vehicle," or an "incomplete vehicle" and the corresponding status of the manufacturers involved. It has not been found feasible or desirable at this time to regulate the numerous variations in relationships that may develop. In the usual case, it will be possible for the affected manufacturers to reach agreement between themselves as to their respective obligations.

The largest number of comments were directed at the section (§ 568.4) establishing requirements for incomplete vehicle manufacturers. That section provides, first, that an incomplete vehicle manufacturer must furnish a document with the vehicle to contain the information specified by the section. The document may be attached to the vehicle in such a manner that it will not be inadvertently detached, or it may be sent directly to a subsequent manufacturer or a purchaser for purposes other than resale. Several comments requested that the information be placed on a permanent label, although the commenters disagreed as to the amount of information to be so placed. Some chassis-cab manufacturers wanted to retain the chassis-cab label, perhaps with the addition of weight ratings, while several body assemblers wanted to have a label containing all the information specified in the regulation. Apart from the greater amount of information

required, which could make a label inconveniently large, there will often be a need for the final-stage manufacturer to retain copies of the document in his files. A detachable document would meet this much better than a label affixed to the vehicle. Despite complaints from some final-stage manufacturers that detachable documents are too easily lost, there was ample indication at the public meeting that other final-stage manufacturers do not experience such problems. It is the Administration's position that the transmittal of the required documents can be reasonably assured by secure attachment and prominent identification, and that no further regulation of the transmittal process is necessary.

The listing of ratings for the gross vehicle weight and the gross axle weight was not objected to except with respect to multipurpose passenger vehicles. It was suggested that "vehicle capacity weight" or a similar term reflecting the passenger capacity be used. After review of the suggestions, the Administration has concluded that the GVWR-GAWR usage, though perhaps not current in some parts of the industry, is nonetheless the simplest and most accurate means of informing subsequent manufacturers of the vehicle's weight characteristics.

After review of the numerous comments on the subject, the Administration has decided not to require manufacturers to provide information on gross combination weight ratings. The term is not in general use in the country and its application is not clear with respect to certain types of combinations. For this reason, and because there are no existing or proposed standards that refer to gross combination weight ratings, it is not now appropriate to require GCWR information.

The regulation adopts the requirement that the incomplete vehicle manufacturer must list in the document each standard, applicable to the types of vehicles into which the incomplete vehicle may be manufactured, that is in effect at the time of manufacture of the incomplete vehicle. He must provide, with respect to each of these standards, one of the three types of statements proposed in the notice, depending on the degree to which his vehicle complies with each standard. If compliance is complete, and certification of the completed vehicle requires only

that the final-stage vehicle manufacturer not alter certain portions of the vehicle, the incomplete vehicle manufacturer may so state. There is no need for parts to be listed in detail, as suggested by one commenting party. The portions of the vehicle may be referred to by part, system, dimensions, or any other method sufficient to objectively identify them.

At the other extreme, an incomplete vehicle manufacturer may state that the design of the incomplete vehicle does not substantially determine the completed vehicle's conformity with a standard. This would be the case, for example, with respect to Standard No. 205, Glazing Materials, if the incomplete vehicle is a stripped chassis. Some comments stated that it appeared unnecessary to recite such standards if the incomplete vehicle manufacturer has nothing to do with them. It is the Administration's position, however, that such a recitation serves as useful notice to final-stage vehicle manufacturers, many of whom may be less familiar with the standards than the incomplete vehicle manufacturers.

Between these two extremes are the situations in which the work of the incomplete vehicle manufacturer partially determines the conformity of the final vehicle, but in which the input of subsequent manufacturers will necessarily affect such conformity. It may be that the main system components are furnished and installed by the incomplete vehicle manufacturer, as in the case of the recently adopted standard on air brake systems, but that the final-stage vehicle manufacturer must necessarily perform operations that affect the performance of the components, such as placing a body on the chassis, thereby affecting the vehicle's weight distribution and center of gravity. In some cases, as under the lighting standard, the incomplete vehicle manufacturer will supply some components that will be installed by the final-stage manufacturer, with or without additional components. In either case, the ultimate conformity of the vehicle is determined by more than one manufacturer, and the regulation deals with this problem by requiring the incomplete vehicle manufacturer to set forth specific conditions under which the completed vehicle will conform to the standard. It is not intended that the incomplete vehicle manufacturer should indicate

all possible conditions under which a vehicle will or will not conform. He must, however, specify at least one set of conditions under which the completed vehicle will conform. A final-stage manufacturer who wishes to act outside these conditions will be on notice that he should consult further with the incomplete vehicle manufacturer, or accept responsibility for conformity with the standard in question. Since the information that the incomplete vehicle manufacturer is required to gather will be developed in the course of his engineering development program, the requirement that this information be supplied to subsequent manufacturers does not appear unduly burdensome, and the requirement is adopted as proposed.

The obligations of the final-stage manufacturer have also been adopted without change from the notice of March 17. The major objection expressed in the comments was that the final-stage manufacturer was often a small company whose input was small relative to that of the incomplete vehicle manufacturer and that he should not bear the burden of certifying that the vehicle fully conforms to the standards. This objection confuses certification with liability. Although the certifying manufacturer may be approached first in the event of his vehicle's nonconformity, if the nonconforming aspect of the vehicle is a component or system supplied by the incomplete vehicle manufacturer, the final-stage manufacturer may establish that he exercised due care by showing that he observed the conditions stated by the incomplete vehicle manufacturer. To the extent that the final vehicle's conformity is determined by work done by the incomplete vehicle manufacturer, the final manufacturer's burden is thus reduced.

Several comments stated that considerable time may elapse between the date of manufacture of the incomplete vehicle and the date of completion of the final-stage vehicle. The regulation deals with this situation by permitting the final-stage manufacturer to select either date or any date in between as the certification date. Although this aspect of the regulation appears to be generally understood, the question arose at the September 18 meeting as to whether a manufacturer may certify compliance with standards

as they are effective at different dates between initial and final manufacture. This question has been answered in the negative. The regulation requires manufacturers to conform to all the standards in effect on a particular date, between the two limits. The NHTSA may repeal certain requirements while instituting others, and those in effect at a particular time must be viewed, and conformed to, as a system. A manufacturer who wishes to comply with a standard before its effective date may do so, of course, even though he is not required to certify. Where amendments to an existing standard are such that a vehicle complying with the amended standard will not comply with the earlier version, the Administration will ordinarily provide in the standard that a manufacturer may elect to comply with the amendment before its effective date, if such a course is considered acceptable.

A further question raised in the comments concerns the status of a manufacturer who does not have title to the vehicle on which he performs manufacturing operations. The Administration's response, as stated at the September 18 meeting, is that if a manufacturer produces a completed vehicle from the incomplete stage, he is a final-stage manufacturer, regardless of title. Basing responsibility for conformity on title would present too many opportunities for evasion, and the actual assembler is the party most likely to have the technical knowledge necessary for effective exercise of responsibility.

Another question concerns the magnitude of the manufacturing operation that makes the vehicle a completed vehicle and its manufacturer a final-stage manufacturer. By its definition a completed vehicle is one that requires no further manufacturing operations in order to perform its intended function, other than the attachment of readily attachable components and minor finishing operations. If a manufacturer installs a component that is not readily attachable, such as a fifth wheel, then he is a final-stage manufacturer even though his contribution to the overall vehicle may appear small. In any case, however, an incomplete vehicle or intermediate manufacturer may assume legal responsibility for the

vehicle and affix the appropriate label under 567.5(b) or 567.5(c) of the certification regulations.

In the event that a "readily attachable component" is a component regulated by the standards, such as a mirror or a tire, the final-stage manufacturer must assume responsibility and certify the vehicle even though he does not install the particular component. Otherwise, the installers of mirrors and tires would be considered final-stage manufacturers, a status that they would probably find unacceptable and that would tend to make certification less meaningful.

In consideration of the above, Title 49, Code of Federal Regulations, is amended as follows:

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A new part 568, *Vehicles Manufactured in Two or More Stages*, is added, reading as set forth below.

Section 571.3 is amended by deleting the definition of "chassis cab."

Sections 571.5(b) and 571.13, and the Ruling Regarding Chassis-cabs appearing at 33 F.R. 29 (January 3, 1968), are revoked.

Issued on April 8, 1971.

Douglas W. Toms  
Acting Administrator

**36 F.R. 7054**  
**April 14, 1971**

## PREAMBLE TO AMENDMENT TO PART 568—VEHICLES MANUFACTURED IN TWO OR MORE STAGES

This notice extends the applicability of the definitions used in the Federal Motor Vehicle Safety Standards to other regulations contained in Chapter V of Title 49, Code of Federal Regulations, and deletes the definitions of "Gross axle weight rating" and "Gross vehicle weight rating" from the regulations governing vehicles manufactured in two or more stages.

49 CFR 571.3(b) contains the definitions used in the Federal Motor Vehicle Safety Standards. Some of the regulations other than standards contain their own definition sections defining terms unique to the regulation, and otherwise incorporating by reference the definitions of Part 571. An example of this is the definition section in the Certification Regulation, 49 CFR 567.3: "All terms that are defined in the Act and the rules and standards issued under its authority are used as defined therein." However, there is no reverse applicability of 49 CFR 571.3(b), which applies only to terms "as used in this part." One result has been that duplicate definitions appear in certain regulations, specifically, the identical definitions of "Gross axle weight rating" and "Gross vehicle weight rating" found in both Part 571 and the regulation on Vehicles Manufactured in Two or More Stages, Part 568. To prevent unnecessary duplication and the possibility of confusion in the future, the Admin-

istration has determined that the definitions used in Part 571 should apply to all regulations in Chapter V, and also that Part 568 should be amended by deleting the definitions of "Gross axle weight rating" and "Gross vehicle weight rating." In consideration of the foregoing 49 CFR 568.3 is amended . . .

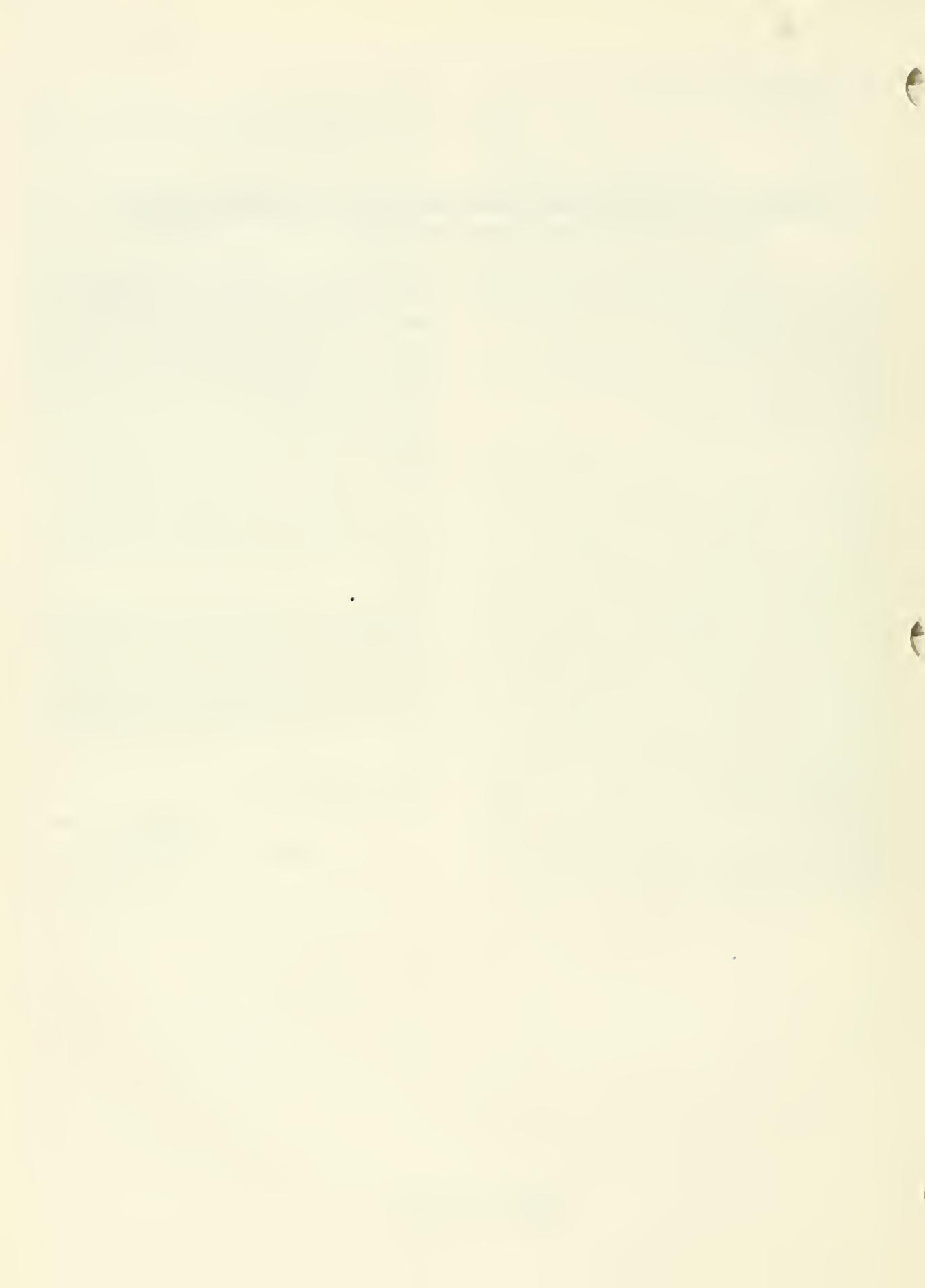
*Effective date:* June 1, 1972. Since this amendment is administrative and interpretive in nature and imposes no additional burden upon any person, notice and public procedure thereon is unnecessary and it may be made effective in less than 30 days after publication in the *Federal Register*.

This notice is issued under the authority of section 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407), and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administration 49 CFR 1.51.

Issued on May 9, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 10938**  
**June 1, 1972**



**PREAMBLE TO AMENDMENT TO PART 568—  
VEHICLES MANUFACTURED IN TWO OR MORE STAGES**

**(Docket No. 72-27; Notice 2)**

This notice establishes certification and labeling responsibilities for persons who alter "completed vehicles" after their certification as conforming to applicable motor vehicle safety standards. The requirements are based on those proposed in a notice of proposed rulemaking published October 25, 1972 (37 F.R. 22800).

Under the new requirements, a person who alters a completed vehicle, other than by the attachment, substitution, or removal of "readily attachable components", will be required to ascertain conformity to all applicable standards as of any date between the manufacture date of the completed vehicle and the manufacture date of the altered vehicle. That person will be required to affix a label (leaving the certification label in place) that identifies the alterer, the date of alteration, the date as of which conformity is determined, and any changes the alteration produces in either gross weight ratings or vehicle classification. A person who does not alter the vehicle, or who adds, substitutes, or removes only readily attachable components will be required to leave the certification label in place, but will not be required, unless the alteration invalidates the stated weight ratings, to provide an additional label. Distributors who do not alter the vehicle, or who alter it using only readily attachable components and do not invalidate the stated weight ratings will meet the certification requirements by leaving the certification label in place. The requirements will place persons who alter completed vehicles on the same basis as final-stage manufacturers, by allowing the former to choose as the date by which vehicle conformity is determined any date between the date on which the completed vehicle is manufactured and the date on which the vehicle is altered. Under

previously existing statutory and regulatory provisions, alterers of vehicles were required to use only the date of completion of the altered vehicle as the date by which conformity could be determined.

General Motors, Truck Body and Equipment Association, and Stutz Motor Car of America supported the proposal without qualification. Other comments generally approved the proposal with some suggested changes.

Several comments argued that the limiting concept of "readily attachable components", the addition, removal, or substitution of which does not create a requirement to affix a label, should not include "mirrors or tire and rim assemblies", as the language appears in §§ 567.6 and .7, and § 568.8. It was argued that these items directly affect the vehicle's conformity to the standards or the weight ratings, and should therefore not be alterable without, in effect, a recertification by the alterer. It was variously suggested that explicit inclusion of these items as examples of readily attachable components might cause a safety problem, a false certification, or a misleading of persons such as dealers as to their responsibilities under the Act and the standards.

The NHTSA does not accept these arguments. The provisions for alteration of vehicles, like the larger certification scheme of which they are a part, are intended to reflect the realities of manufacture and distribution. It is a fact that the substitution of tires by a dealer takes place in a substantial fraction of all vehicle sales. Moreover, a large proportion of the components that are in fact frequently altered at the dealer level are directly affected by standards: mirrors, tires, rims, lighting accessories, bumper guards and attachments, windshield wipers and washers, hub

caps and wheel nuts, seat belts, and interior components such as air conditioners or radios that come within the head impact area, to name a few. If these items were not included in the concept of readily attachable components, for which an alteration label is not required, it is safe to say that virtually every dealer in the country would be affixing labels to many of the vehicles he sold.

It was not the intent of this agency to create such a manifold expansion of labeling requirements. The altered-vehicle label is designed primarily to reach those cases where a completed vehicle is significantly altered, in a manner, and with components, not provided by the original manufacturer. The substitution or addition of parts such as tires, rims, and mirrors is a routine aspect of typical vehicle distribution systems, and the cost burden of affixing a permanent label to the vehicle has not been found to be justified in that situation. For these reasons the language of the regulation has in these respects been retained as proposed.

The requirement to keep a vehicle in conformity to the standards and the weight ratings applies throughout the chain of distribution regardless of any labeling requirements, and this agency has no intent of downgrading the importance of that requirement. The comments did reveal a justifiable concern of manufacturers for situations where the vehicle might be altered, as by substitution of tires, in a way that its stated weight ratings are no longer valid. Also, there may well be cases where a customer wants a vehicle to have lighter components for its intended purpose, and would accept lowered weight ratings. To deal with these cases, language has been added to sections 567.6 and .7, and 568.8, to require the affixing of an alteration label whenever any type of alteration is made that would invalidate the stated weight ratings.

American Motors and Jeep argued that requiring alterers to certify conformity discriminates against manufacturers' dealers. They pointed out that dealers, who generally alter vehicles before sale, are required to maintain conformity, while aftermarket installers of equipment, because the additions they make are to "used" vehicles, need not. They suggested that

"special add-on accessories" be excepted from the requirements, that a new category of "Special Motorized Equipment" be created to which some of the standards would not apply, that equipment standards be issued to cover aftermarket installers, and that highway safety program standards prohibit the alteration of vehicles such that they would not conform to the standards. These comments are not, in the view of this agency, within the scope of the rulemaking. Requests of this nature should be submitted as petitions for rulemaking, with supporting data, in accordance with the procedures of 49 CFR Part 553.

British Leyland suggested that an exemption to the labeling requirements be made for persons installing accessories which the original vehicle manufacturer makes available, and whose installation he knows will not affect vehicle conformity. The NHTSA expects that most accessories meeting this description will be readily attachable within the sense of the regulation, and no further labeling in these cases will be required. It should be noted that the category of "readily attachable components" cannot be sharply defined, and in any marginal case the NHTSA will accept the reasonable judgment of the parties concerned, especially where the original manufacturer and the alterer are in agreement. In cases where components of this type are not found to be readily attachable, the burden on the alterer to determine that the alteration does not destroy conformity is minimized, leaving him with essentially no more than the attachment of the alterer label.

Certain comments pointed out that while proposed sections 567.7 and 568.8 are not limited in their application to distributors, that limitation had been retained in section 567.6. The comments suggested that, as sections 567.7 and 568.8 applied to dealers, section 567.6 should likewise so apply. The substance of the suggestion has been adopted in the final rule, by modifying § 567.6 to apply to any "person".

The Recreation Vehicle Institute (RVI) suggested that manufacturers of completed vehicles be required to supply a document when requested by a vehicle alterer, similar to that provided final-stage manufacturers, that advises alterers how to achieve or retain conformity. This sug-

gestion has not been adopted. If a vehicle manufacturer wishes to provide information on the alteration of his vehicles, he of course may do so. Once a completed, certified vehicle has been produced, however, the NHTSA does not believe it reasonable to require manufacturers to provide persons who might alter that vehicle with additional certification information. The requirement to provide information concerning incomplete vehicles (Part 568) is founded on the fact that an incomplete vehicle manufacturer has marketed his vehicles with the express intent of having them completed by other persons. This is not the case with completed vehicles.

RVI also suggested that the regulation specifically provide that alterers be allowed to base their conclusions as to conformity on the original certification. The NHTSA does not consider such a provision to be meaningful. The extent to which the alterer's conformity assurance may be based on the original certification depends entirely on what the alterer does to the vehicle, which is a fact peculiarly within his knowledge.

Certain comments suggested that compliance with the requirements be permitted before the

specified effective date. The NHTSA believes this request to be meritorious. Alterers will be able to conform to existing requirements or to those issued by this notice at any time up to the effective date.

In light of the above, amendments are made to 49 CFR Parts 567 and 568 . . . .

*Effective date:* February 1, 1974. However, persons who alter vehicles may at any time before that date conform to the provisions issued in this in lieu of existing provisions of 49 CFR Parts 567 and 568.

Sections 103, 112, 114, 119, Pub. L. 89-563, 80 Stat. 718; 15 U.S.C. 1392, 1401, 1403, 1407; delegation of authority at 38 F.R. 12147.

Issued on June 13, 1973.

James E. Wilson  
Associate Administrator  
Traffic Safety Programs

**38 F.R. 15961**  
**June 19, 1973**



## PART 568—VEHICLES MANUFACTURED IN TWO OR MORE STAGES

(Dockets No. 70-6, 70-8, and 70-15)

### § 568.1 Purpose and scope.

The purpose of this part is to prescribe the method by which manufacturers of vehicles manufactured in two or more stages shall ensure conformity of those vehicles with the Federal motor vehicle safety standards ("standards") and other regulations issued under the National Traffic and Motor Vehicle Safety Act.

### § 568.2 Application.

This part applies to incomplete vehicle manufacturers, intermediate manufacturers, and final-stage manufacturers of vehicles manufactured in two or more stages.

### § 568.3 Definitions.

"Completed vehicle" means a vehicle that requires no further manufacturing operations to perform its intended function, other than the addition of readily attachable components, such as mirrors or tire and rim assemblies, or minor finishing operations such as painting.

"Final-stage manufacturer" means a person who performs such manufacturing operations on an incomplete vehicle that it becomes a completed vehicle.

"Incomplete vehicle" means an assemblage consisting, as a minimum, of frame and chassis structure, power train, steering system, suspension system, and braking system, to the extent that those systems are to be part of the completed vehicle, that requires further manufacturing operations, other than the addition of readily attachable components, such as mirrors or tire and rim assemblies, or minor finishing operations such as painting, to become a completed vehicle.

"Intermediate manufacturer" means a person, other than the incomplete vehicle manufacturer or the final-stage manufacturer, who performs manufacturing operations on an incomplete vehicle.

"Incomplete vehicle manufacturer" means a person who manufactures an incomplete vehicle by assembling components none of which, taken separately, constitute an incomplete vehicle.

### § 568.4 Requirements for incomplete vehicle manufacturers.

(a) The incomplete vehicle manufacturer shall furnish with the incomplete vehicle, at or before the time of delivery, a document that contains the following statements, in the order shown, and any other information required by this chapter to be included therein.

(1) Name and mailing address of the incomplete vehicle manufacturer.

(2) Month and year during which the incomplete vehicle manufacturer performed his last manufacturing operation on the incomplete vehicle.

(3) Identification of the incomplete vehicle(s) to which the document applies. The identification may be by serial number, groups of serial numbers, or otherwise, but it must be sufficient to ascertain positively that a document applies to a particular incomplete vehicle after the document has been removed from the vehicle.

(4) Gross vehicle weight rating of the completed vehicle for which the incomplete vehicle is intended.

(5) Gross axle weight rating for each axle of the completed vehicle, listed and identified in order from front to rear.

(6) Listing of the vehicle types as defined in 49 CFR § 571.3 (*e.g.*, truck, MPV, bus, trailer) into which the incomplete vehicle may appropriately be manufactured.

(7) Listing by number of each standard, in effect at the time of manufacture of the incomplete vehicle, that applies to any of the vehicle types listed in subparagraph (7) of this paragraph, followed in each case by one of the following three types of statement, as applicable:

(i) A statement that the vehicle when completed will conform to the standard if no alterations are made in identified components of the incomplete vehicle.

*EXAMPLE:*

“107—This vehicle when completed will conform to Standard 107, Reflecting Surfaces, if no alterations are made in the windshield wiper components or in the reflecting surfaces in the interior of the cab.”

(ii) A statement of specific conditions of final manufacture under which the manufacturer specifies that the completed vehicle will conform to the standard.

*EXAMPLE:*

“121—This vehicle when completed will conform to Standard 121, Air Brake Systems, if it does not exceed any of the gross axle weight ratings, if the center of gravity at GVWR is not higher than nine feet above the ground, and if no alterations are made in any brake system component.

(iii) A statement that conformity with the standard is not substantially determined by the design of the incomplete vehicle, and that the incomplete vehicle manufacturer makes no representation as to conformity with the standard.

(b) The document shall be attached to the incomplete vehicle in such a manner that it will not be inadvertently detached, or alternatively, it may be sent directly to a final-stage manufacturer, intermediate manufacturer or purchaser for purposes other than resale to whom the incomplete vehicle is delivered.

**§ 568.5 Requirements for intermediate manufacturers.**

Each intermediate manufacturer of an incomplete vehicle shall furnish the document required by § 568.4 of this part, in the manner specified in that section. If any of the changes in the vehicle made by the intermediate manufacturer affect the validity of the statements in the document as provided to him he shall furnish an addendum to the document that contains his name and mailing address and an indication of all changes that should be made in the document to reflect changes that he made in the vehicle.

**§ 568.6 Requirements for final-stage manufacturers.**

(a) Each final-stage manufacturer shall complete the vehicle in such a manner that it conforms to the standards in effect on the date of manufacture of the incomplete vehicle, the date of final completion, or a date between those two dates. This requirement shall, however, be superseded by any conflicting provisions of a standard that applies by its terms to vehicles manufactured in two or more stages.

(b) Each final-stage manufacturer shall certify that the entire vehicle conforms to all applicable standards, in accordance with section 567.5 of Title 49 of the Code of Federal Regulations, *Requirements for manufacturers of vehicles manufactured in two or more stages.*

**§ 568.7 Requirements for manufacturers who assume legal responsibility for the vehicle.**

(a) If an incomplete vehicle manufacturer assumes legal responsibility for all duties and liabilities imposed on manufacturers by the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1381-1425) (hereafter referred to as “the Act”), with respect to the vehicle as finally manufactured, the requirements of §§ 568.4, 568.5 and 568.6(b) of this part do not apply to that vehicle. In such a case, the incomplete vehicle manufacturer shall ensure that a label is affixed to the final vehicle in conformity with § 567.5(b) of this part.

(b) If an intermediate manufacturer of a vehicle assumes legal responsibility for all duties

and liabilities imposed on manufacturers by the Act, with respect to the vehicle as finally manufactured, §§ 568.5 and 568.6(b) of this part do not apply to that vehicle. In such a case, the manufacturer assuming responsibility shall ensure that a label is affixed to the final vehicle in conformity with § 567.5(c) of this part. The assumption of responsibility by an intermediate manufacturer does not, however, change the requirements for incomplete vehicle manufacturers in 568.4.

**[§ 568.8 Requirements for persons who alter certified vehicles.**

A person who alters a vehicle that has been previously certified in accordance with § 567.4 or § 567.5, other than by the addition, substitution,

or removal of readily attachable components such as mirrors or tire and rim assemblies, or minor finishing operations such as painting, or who alters the vehicle in such a manner that its stated weight ratings are no longer valid, before the first purchase of the vehicle in good faith for purposes other than resale, shall ascertain that the vehicle as altered conforms to the standards in effect on the original date of manufacture of the vehicle, the date of final completion, or a date between those two dates. That person shall certify that the vehicle conforms to all applicable standards in accordance with § 567.7 of this chapter. (38 F.R. 15961—June 19, 1973. Effective: 2/1/74)]

**April 14, 1971  
36 F.R. 7054**



## PREAMBLE TO PART 569—REGROOVED TIRES

(Docket No. 20; Notice No. 4)

The purpose of this amendment is to establish criteria under which regrooved tires may be sold or delivered for introduction into interstate commerce. The regulation allows only tires designed for the regrooving process to be regrooved; specifies dimensional and conditional requirements for the tire after the regrooving process; and sets forth labeling requirements for the tire which is to be regrooved.

Section 204(a) of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1424) provides that no person shall sell, offer for sale, or introduce for sale or delivery for introduction into interstate commerce, any tire or motor vehicle equipped with any tire which has been regrooved but gives the Secretary the authority to permit the sale of regrooved tires and motor vehicles equipped with regrooved tires when the regrooved tires are designed and constructed in a manner consistent with the purposes of the Act.

A Notice was published (32 F.R. 11579) affording interested persons an opportunity to present views, information and data to form the basis for permitting the sale and delivery for introduction into interstate commerce of regrooved tires and motor vehicles equipped with regrooved tires.

After considering the comments, data, information received and the state-of-the-art a proposed regulation setting forth criteria to govern the regrooving of tires was published (33 F.R. 8603). All comments received have been considered.

As proposed, it was not clear that the definition of regroovable and regrooved tires would allow the regrooving of retreaded tires. Two comments asked whether the regulation would allow the established practice of regrooving a retreaded motor vehicle tire. The Administrator has determined that regrooving sound retreaded

tires does not affect their level of safety performance. Accordingly, the regulation as issued is clarified so as to allow regrooving of both original tread and retreaded motor vehicle tires. There is presently under consideration a Federal motor vehicle safety standard for retreaded tires. When this standard is established, retreaded tires that are regrooved will have to conform to the retread requirements as well as the regrooved tire regulations.

\*The Notice of Proposed Rule Making appearing in June 12, 1968, issue of the *Federal Register* (33 F.R. 8603) was issued under 23 CFR 256, Parts of the Code of Federal Regulations relating to motor vehicle safety were transferred to Title 49 by Part II of the *Federal Register* of December 25, 1968 (33 F.R. 19700).

Section 256.5(a)(3) as contained in the Notice of Proposed Rule Making would have required that, after the regrooving process, there be a protective covering of tread material at least  $\frac{3}{32}$ -inch thick over the tire cord. Four comments asked that this requirement be deleted. It was argued that this would require the removal of regrooved tires with "many usable miles" remaining on the tires.

The  $\frac{3}{32}$ -inch undertread requirement is directly comparable to the undertread of a new tire. It is considered necessary that there be  $\frac{3}{32}$  of an inch of rubber over the cord material as a protection against road hazard damage. Furthermore, this protection is considered essential in order to prevent moisture entering the ply material and subsequently causing deterioration of the tire fabric and ply adhesion. For these reasons, it is concluded that to allow an undertread of less than  $\frac{3}{32}$  of an inch would not be in the public interest.

One comment argued that a tire would have to be completely cut to determine the thickness of the undertread. Since it is acceptable practice to determine undertread depth by use of an awl and only a very limited degree of expertise is

needed to make this measurement without causing damage to the tire, this argument has been rejected.

Section 256.5(a)(4) as contained in the Notice of Proposed Rule Making would have required that after regrooving, the tire have a minimum of 90 linear inches of tread edges per linear foot of tire circumference. Four comments requested clarification of this requirement as to whether the original molded tread was to be included in the measurements for this requirement. The initial intent of this requirement was to include only the newly cut grooves. However, after considering the fact that residual existent grooves offer tread edges which contribute to the traction of the tire, the regulation as issued is revised to allow that portion of the original tread pattern of a regroovable tire which is at least as deep as the new regroove depth to be included within the calculation of the 90 linear inches of tread edges required in each foot of tire circumference.

Section 256.5(a)(5) as contained in the Notice of Proposed Rule Making would have required that, after regrooving, the groove width be a minimum of  $\frac{3}{16}$ -inch and a maximum of  $\frac{5}{16}$ -inch. Four comments requested clarification whether this requirement applied to the original molded tread pattern as well as the tread pattern created by regrooving. It was not intended that this requirement apply to the original molded tread pattern and the regulation as issued is revised to make this clear.

One comment pointed out that the use of the term "tractionizing" within Section 256.5(b) was too general and that the proper term for cross-cutting the tread without rubber removal is "siping." Accordingly, the regulation as issued is revised to reflect this suggestion.

Section 256.7 as contained in the Notice of Proposed Rule Making specified certain labeling requirements for regroovable and regrooved tires. Four comments contended that the labeling requirements should not be included within the regulation. Two other comments stated that the proposed labeling was too large and requested

smaller size symbols and letters. The Administrator recognizes that several names or brands are used to identify regroovable tires and has therefore determined that concise identification of regroovable tires is needed. For this reason the regulation as issued requires molding on a regroovable tire the word "Regroovable," but permits lettering one half the size proposed in the Notice of Proposed Rule Making. However, with regard to the proposed requirement that each regrooving be indicated on the tire, it was found that such a requirement was not necessary in view of the minimum undertread requirement in the regulation and that proposed requirement has been deleted.

In consideration of the foregoing, Part 369—Regrooved Tire Regulation set forth below is added to Title 49—Transportation, Chapter III—Federal Highway Administration, Department of Transportation, Subchapter A—Motor Vehicle Safety Regulations. [This regulation becomes effective April 1, 1969. (34 F.R. 3687—March 1, 1969.)]

This regulation is issued under authority of Sections 119 and 204 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1407 and 1424) and the delegation from the Secretary of Transportation, Part I of the Regulations of the Office of the Secretary (49 CFR § 1.4(c)).

Issued January 17, 1969.

Lowell K. Bridwell,  
Federal Highway Administrator

34 F.R. 1149  
January 24, 1969

#### SECTION

- 369.1 Purpose and Scope
- 369.3 Definitions
- 369.5 Applicability
- 369.7 Requirements
- 369.9 Labeling of Regroovable Tires

**PREAMBLE TO AMENDMENT TO PART 569—REGROOVED TIRES****(Docket No. 20; Notice 5)****Extension of Effective Date**

On January 24, 1969, the Federal Highway Administrator published in the *Federal Register* (34 F.R. 1149) a regulation setting forth the conditions under which regrooved tires would be allowed to be sold, offered for sale, introduced for sale, or delivered for introduction into interstate commerce. As published the regulation had an effective date of February 28, 1969.

Several petitions have been received requesting reconsideration of the regrooved tire regulation. The Administrator finds that the petitions do not raise either substantial arguments that have not been carefully considered in issuing the regulation or matters that would require a change in

the regulation, and, therefore, the petitions are denied.

Several petitioners have requested that the effective date of the regulation be postponed. Upon consideration of these requests, I find that good cause exists for postponing the effective date of the regrooved tire regulation, 49 CFR Part 369, from February 28, 1969, to April 1, 1969.

Issued on February 28, 1969.

John R. Jamieson,  
Federal Highway Administrator

**34 F.R. 3687**  
**March 1, 1969**



## PREAMBLE TO AMENDMENT TO PART 569—REGROOVED TIRES

(Docket 74-19; Notice 1)

This notice amends regulations applicable to regrooved and regroovable tires in response to an opinion of the United States Court of Appeals in *NAMBO v. Volpe* 484 F.2d 1294 (D.C. Cir., 1973), cert. denied \_\_\_\_\_US\_\_\_\_\_ (1974). The Regrooved Tire regulation was published January 24, 1969 (34 F.R. 1149).

In light of the decision in the case cited, 49 CFR Part 569, "Regrooved Tires," is revised...

*Effective date:* April 30, 1974. This amendment is issued in response to a decision of the United States Court of Appeals, and in accordance therewith imposes restrictions required by

statute. Accordingly, notice and public procedure thereon are unnecessary and good cause is found for an effective date less than 30 days from publication.

(Secs. 119, 204, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1407, 1424; delegation of authority at 49 CFR 1.51.)

Issued on April 24, 1974.

James B. Gregory  
Administrator

**39 F.R. 15038**  
**April 30, 1974**



## PART 569—REGROOVED TIRES

### § 569.1 Purpose and Scope.

[This part sets forth the conditions under which regrooved and regroovable tires manufactured or regrooved after the effective date of the regulation may be sold. (39 F.R. 15038—April 30, 1974. Effective: 4/30/74)]

### § 569.3 Definitions.

(a) *Statutory Definitions.* All terms used in this part that are defined in Section 102 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1391) are used as defined in the Act.

(b) *Motor Vehicle Safety Standard Definitions.* Unless otherwise indicated, all terms used in this part that are defined in the Motor Vehicle Safety Standards, Part 371, of this subchapter (hereinafter "The Standards"), are used as defined therein without regard to the applicability of a standard in which a definition is contained.

(c) "Regroovable tire" means a tire, either original tread or retread, designed and constructed with sufficient tread material to permit renewal of the tread pattern or the generation of a new tread pattern in a manner which conforms to this part.

(d) "Regrooved tire" means a tire, either original tread or retread, on which the tread pattern has been renewed or a new tread has been produced by cutting into the tread of a worn tire to a depth equal to or deeper than the molded original groove depth.

### § 569.5 Applicability.

(a) *General.* Except as provided in paragraph (b) of this section, this part applies to all motor vehicle regrooved or regroovable tires manufactured or regrooved after the effective date of the regulation.

(b) *Export.* This part does not apply to regrooved or regroovable tires intended solely for export and so labeled or tagged.

### § 569.7 Requirements.

#### [(a) *Regrooved tires.*

(1) Except insofar as the sale of regrooved tires is permitted by paragraph (a)(2) of this section, no person shall sell, offer for sale, or introduce or deliver for introduction into interstate commerce regrooved tires produced by removing rubber from the surface of a worn tire tread to generate a new tread pattern. Any person who regrooves tires and leases them to owners or operators of motor vehicles and any person who regrooves his own tires for use on motor vehicles is considered to be a person delivering for introduction into interstate commerce within the meaning of this part.

(2) A regrooved tire may be sold only if it conforms to each of the following requirements:

(i) The tire being regrooved shall be a regroovable tire;

(ii) After regrooving, cord material below the grooves shall have a protective covering of tread material at least  $\frac{3}{32}$ -inch thick.

(iii) After regrooving, the new grooves generated into the tread material and any residual original molded tread groove which is at or below the new regrooved groove depth shall have a minimum of 90 linear inches of tread edges per linear foot of the circumference;

(iv) After regrooving, the new groove width generated into the tread material shall be a minimum of  $\frac{3}{16}$ -inch and a maximum of  $\frac{5}{16}$ -inch.

(v) After regrooving, all new grooves cut into the tread shall provide unobstructed fluid escape passages; and

(vi) After regrooving, the tire shall not contain any of the following defects, as determined by a visual examination of the tire

either mounted on the rim, or dismantled, whichever is applicable:

(A) Cracking which extends to the fabric,

(B) Groove cracks or wear extending to the fabric, or

(C) Evidence of ply, tread, or sidewall separation.

(vii) If the tire is siped by cutting the tread surface without removing rubber, the tire cord material shall not be damaged as a result of the siping process, and no sipe shall be deeper than the original or retread groove depth.

(b) *Siped regroovable tires.* No person shall sell, offer for sale, or introduce for sale or deliver for introduction into interstate commerce a regroovable tire that has been siped by cutting the tread surface without removing rubber if the

tire cord material is damaged as a result of the siping process, or if the tire is siped deeper than the original or retread groove depth. (39 F.R. 15038—April 30, 1974. Effective: 4/30/74)】

**§ 569.9 Labeling of Regroovable Tires.**

(a) *Regroovable Tires.* After August 30, 1969, each tire designed and constructed for regrooving shall be labeled on both sidewalls with the word "Regroovable" molded on or into the tire in raised or recessed letters .025 to .040 inches. The word "Regroovable" shall be in letters 0.38 to 0.50 inches in height and not less than 4 inches and not more than 6 inches in length. The lettering shall be located in the sidewall of the tire between the maximum section width and the bead in an area which will not be obstructed by the rim flange.

**34 F.R. 1150**  
**January 24, 1969**

## PREAMBLE TO PART 570—VEHICLE IN USE INSPECTION STANDARDS

(Docket No. 73-9; Notice 2)

This notice adds Part 570, *Vehicle In Use Inspection Standards* to Chapter V, Title 49, Code of Federal Regulations.

Part 570 does not in itself impose requirements on any person. It is intended to be implemented by the States through the highway safety program standards issued under the Highway Safety Act (23 U.S.C. 402) with respect to inspection of motor vehicles with a gross vehicle weight rating of 10,000 pounds or less, except motorcycles and trailers. General provisions regarding vehicle inspection are set forth in NHTSA Highway Safety Program Manual Vol. 1 *Periodic Motor Vehicle Inspection*. Standards and procedures are adopted for hydraulic service brake systems, steering and suspension systems, tire and wheel assemblies.

Interested persons have been afforded an opportunity to participate in the making of these amendments by a notice of proposed rulemaking published in the *Federal Register* on April 2, 1973 (38 F.R. 8451), and due consideration has been given to all comments received in response to the notice, insofar as they relate to matters within the scope of the notice. Except for editorial changes, and except as specifically discussed herein, these amendments and the reasons therefore are the same as those contained in the notice.

*Policy considerations.* A total of 120 comments were received in response to the notice. These comments were submitted by State motor vehicle agencies, national safety organizations, motor vehicle associations, vehicle and equipment manufacturers, antique car clubs and owners, public interest groups, and individual citizens. The commenters were predominantly in favor of periodic motor vehicle inspection (PMVI) and the establishment of uniform motor vehicle in use safety standards throughout the United States.

As the NHTSA stated in the prior notice, cost-benefit factors were the primary policy consideration in developing the inspection standards and procedures. The primary concern of the States was the socioeconomic impact on the motoring public as well as the impact on the State itself. The general consensus was that the proposed inspection requirements would require a significant increase in facilities, operating personnel, and equipment. Though cost effectiveness was a predominant concern the States nevertheless felt that inspections should include vehicles over 10,000 pounds gross vehicle weight and be extended to include other vehicle systems. Several States expressed concern for the cost of implementing the proposed standards, estimating it at from \$10 to \$14 per car. Even though these States favored PMVI and now have PMVI or random inspection they felt that implementation costs would have a decided economic impact.

NHTSA has responded to these comments allowing an optional road test as a check of service brake system performance, adopting neither of the proposed parking brake procedures, and simplifying test procedures where possible so that tests may be conducted with a minimum added expenditure for equipment, personnel, and facilities. These matters will be discussed subsequently.

The establishment of the proposed standards as "minimum requirements" was questioned by several States as leading to a "watering down" of current requirements in those States which currently meet or exceed them. The NHTSA repeats its intent that the standards are not intended to supplant State standards that establish a higher performance, or to discourage them from establishing or maintaining standards for other vehicle systems not covered by NHTSA.

A number of comments were received from antique car clubs and individual owners who believe that antique, special interest, and vintage cars should be exempt from the proposed standards. These comments should be directed to the States. Each State has its own definitions and registration requirements for vehicles of this nature, and the NHTSA intends the States to implement Part 570 to the extent that it is compatible with its current requirements for these special vehicles.

Several respondents commented that the proposed standard should be expanded to include lighting, glazing, exhaust, wipers, horns, controls, and instrumentation systems. The consensus was that the cost-benefit ratio would materially increase if these systems were included in the proposed standard since inspection of these systems does not require time-consuming procedures or special tools, and corrective measures are less costly to the owner. Some considered it contradictory that safety systems covered by the Federal standards must meet safety performance requirements at the time of manufacture and not during the service life of the vehicle. As the NHTSA stated in the prior notice, the initial Federal effort is intended to cover those vehicles and vehicle systems whose maintenance in good order has proven critical to the prevention of traffic accidents. Requirements for motorcycles and trailers, and for less critical systems, are under study, and the NHTSA intends to take such rulemaking action in the future as may be appropriate to cover them.

*Applicability.* A frequent comment was that the standards and procedures should be extended to cover vehicles whose GVWR exceeds 10,000 pounds. Because braking and steering and suspension systems on these vehicles differ materially from those on lighter vehicles, different criteria must be established and the proposed standards simply cannot be extended to cover them. The NHTSA, however, is developing appropriate inspection standards and procedures for heavy vehicles and will propose them in a notice to be issued by mid-October 1973.

*Brake systems.* Several comments were received questioning the procedure for determining operability of the brake failure indicator lamp.

In some vehicles the parking brake indicator and service brake system failure indicator use the lamp and the methods of simulating failure vary.

It is realized that the procedure specified by the standard is general in nature and cannot cover all possible systems. In those vehicles where a lamp test cannot be executed in the normal manner the test will have to be conducted in accordance with the manufacturer's specifications, as determined by the vehicle inspector.

The brake system integrity test for fluid leakage has been modified on the basis of comments that it was not stringent enough. It was proposed that decrease in pedal height under 125 pounds force for 10 seconds should not exceed one-quarter of an inch. The requirement adopted is that there be no perceptible decrease in pedal height when 125 pounds of force is applied to the brake pedal and held for 30 seconds.

The brake pedal reserve test has been adopted substantially as proposed, and specifies that the engine be operating at the time of the test. Vehicles with full power (central hydraulic) brake systems are exempted from this test as the service brake performance test will be adequate to test such systems.

The service brake performance test offers the option of a road test, or testing upon a drive-on platform or roller-type brake analyzer (originally proposed under the title "Brake equalization"). States that conduct random inspections, and those that designate agents to perform vehicle inspections, objected strenuously to a test requiring the use of roller-type or drive-on test equipment. Consequently, an alternate test has been adopted which requires vehicles to stop from 20 mph in 25 feet or less without leaving a 12-foot wide lane. It is intended that this option be used only by States where it is current practice, and it is hoped that such States where practicable will change to the drive-on brake platform or roller-type brake analyzer tests. The terms "crimped" and "damaged" have been eliminated as causes for rejection of brake hoses, as redundant. If brake discs and drums are not embossed with safety tolerances, the requirement has been added that they be within the manufacturer's recommended specifications.

The primary concern regarding power assist units was that the brake pedal will rise instead of falling on a full-power brake system when tested according to the procedure proposed. In view of the basic design of a full-power brake system this test would not be a proper check of system operation, and will not be required. As noted earlier, the service brake performance test will be used as the primary test of the full-power brake performance. To accord with the terminology of Standard No. 105a this section has been renamed "Brake power units."

The parking brake system inspection proposal proved controversial. The NHTSA proposed two objective, alternate tests, the first requiring the system to hold the vehicle on a 17 percent grade, and the second requiring the system to stop the vehicle from 20 mph within 54 feet. The first was objected to principally on the ground that each inspection station would have to construct a 17 percent grade. This would present problems for both in-line and bay type inspection facilities. The stopping distance test, on the other hand, was opposed as a dynamic test more appropriate for service brake evaluation. In view of these objections, the parking brake inspection requirements were not adopted.

*Steering and suspension systems.* The primary objections to the steering wheel test for free play concerned the test condition with the engine off on vehicles equipped with power steering, the linear measure of system free play (instead of angular measure to eliminate the variance due to steering wheel diameters), and the 2-inch free play limit for rack and pinion type steering gear.

The tolerance proposed and adopted for steering wheel free play is 2 inches for wheels of 16 inches diameter or less, since few passenger car steering wheels exceed this diameter. However, a table of free play values for older vehicles with steering wheels over 16 inches in diameter has been added to the standard. The requirement to have the engine running is being added to the procedure since steering wheel play can be greater with the engine off than with the engine on for cars equipped with power steering. Steering play on cars equipped with rack and pinion type steering will require further review

to determine if the 2-inch tolerance should be changed.

Some comments argued that wheel alignment tolerances were considered too restrictive in the toe-in condition, and too lenient in toe-out. Some comments recommended visual inspection of tire wear as criteria to determine alignment. However, visual inspection of tire wear is not considered a valid method of checking alignment, and therefore was not adopted as an alternate method. No consensus of alternative values could be derived from the comments, and the proposed tolerances of 30 feet per mile have been adopted.

The requirements for the condition of shock absorber mountings, shackles, and U-bolts have been changed from "tight" to "securely attached" as a clarification.

*Tire and wheel assembly standards and inspection procedures.* Several comments were received suggesting that rim deformation in excess of one-sixteenth of an inch be permitted, as the proposed tolerance would result in rejection of otherwise safe vehicles. The primary concern of the requirement is air retention, and since vehicles with wheel deformation of one-sixteenth of an inch apparently perform satisfactorily in service without hazard the deformation tolerance has been increased to three thirty-seconds of an inch runout for both lateral and radial bead seat areas.

*Effectivity.* Several commenters questioned the proposed effective date, 30 days after publication of the final rule. The NHTSA considers it in the public interest that minimum Federal standards for motor vehicles in use become effective without further delay. Implementation by the States will take place within the context of their highway safety programs, and the plans approved by the NHTSA under the Highway Safety Act, 23 U.S.C. 402.

In consideration of the foregoing, Title 49, Code of Federal Regulations is amended by adding Part 570 to read as set forth below.

*Effective date.* Sept. 28, 1973. Since this part does not in itself impose requirements on any person it is determined for good cause shown that an effective date earlier than 180 days after

Effective: September 28, 1973

publication of the final rule is in the public interest.

(Sec. 103, 108, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1397, 1407; delegation of authority at 49 CFR 1.51.)

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Issued on: Aug. 29, 1973.

James B. Gregory  
Administrator

**38 F.R. 23949**

**September 5, 1973**

## PREAMBLE TO AMENDMENT TO PART 570—VEHICLE IN USE INSPECTION STANDARDS

(Docket No. 73-9; Notice 4)

This notice responds to petitions for reconsideration of Vehicle In Use Inspection Standards and amends the standards in certain minor respects.

The Vehicle In Use Inspection Standards, 49 CFR Part 570, were published on September 5, 1973 (38 F.R. 23919). Thereafter, pursuant to 49 CFR 553.35, petitions for reconsideration of the rule were received from Motor Vehicle Manufacturers Association (MVMA), Rubber Manufacturers Association (RMA), Firestone Tire and Rubber Company (Firestone), General Motors Corporation (GM), and Ford Motor Company (Ford). This notice discusses the major issues raised by these petitions and their resolution.

Ford called NHTSA's attention to an oversight in the inspection procedure for brake pedal reserve in § 570.5. Notice 1 proposed a force of 25 pounds for power-assisted brake systems and 50 pounds for all other brake systems. These forces were inadvertently omitted in Notice 2, and, accordingly, § 570.5 is amended to include them.

GM and the MVMA requested that the period during which a 125-pound force is applied to the brake pedal be reduced from 30 seconds to 10 seconds. Since the purpose of the standard is to check for brake fluid leakage, and this can be determined during a 10-second period, the petition is granted.

Ford requested that § 570.5(e) "Service Brake System—Brake Hoses and Assemblies" be amended to allow "rub rings," installed as hose protection devices, to come in contact with a vehicle body or chassis. The purpose of these devices as stated by Ford is to prevent damage to hose or tubing and thus promote motor vehicle safety. NHTSA, after investigation, has determined that rub rings or similar protective devices

do provide brake hose and tube protection, and § 570.5(e) is amended accordingly. However, should the rub rings wear or abrade to the extent that the hoses or tubing contact the chassis or vehicle body, the vehicle should be rejected.

GM requested that the procedure for inspecting steering wheel lash in § 570.7(a) be revised so as to yield more consistent results between examiners and inspection stations. It was GM's contention that the term "perceptible movement" was too subjective, and that the many intangible factors involved in the inspection procedure would not provide an objective and repeatable test. The procedure recommended by GM would involve applying a specified force in one direction to remove lash and provide a small amount of torsional wind up, releasing the wheel, and applying another force in the same direction to establish a reference point. The process would be repeated in the opposite direction to establish a second reference point. The distance between the two points would then be measured.

Although the inspection procedure proposed by GM may provide a more objective test of steering system play, it is the belief of NHTSA that additional time will be required to evaluate their proposal under field test conditions with various steering wheel diameters. Therefore, action on this request will be held in abeyance pending completion of such a study.

Ford and GM requested a change in the toe-in alignment specifications listed in § 570.7(d), stating that several vehicles currently in service would exceed the 30 ft/mi toe-in limits established in the standard. For example, 1974 Ford Service Specifications—Tire Scrub (based on a 29-in diameter tire/wheel assembly) shows a maximum toe-in for certain Ford vehicles of 82.5 ft/mi based on 11.78 ft/mi tire scrub for each  $\frac{1}{16}$ -in toe-in. In its submission to Docket

No. 73-9, Ford recommended that the toe-in requirement be no more stringent than 1.5 times the manufacturer's maximum toe-in specification. In consideration of the wide variance between manufacturers' toe-in specification, the limits of  $\pm 30$  ft/mi currently used in some State inspections appear to be reasonable for some vehicles and unduly restrictive for others. § 570.7(d), therefore, is amended to make the requirement more equitable.

The NHTSA, however, believes that wheel alignment designs with high toe-in values are not in the best interests of the consumer, as both tire wear and fuel economy are affected adversely with high toe-in/toe-out conditions. For this reason, industry action to alleviate this problem will be carefully observed.

RMA and Firestone petitioned for a clarification of the language of § 570.9(b) concerning tire type. It was suggested that "tire size designation" would be more explicit than tire "nominal size." NHTSA believes the suggested phrase more clearly defines the intent of the standard, and the petition is granted.

The petitioners additionally contend that the language in § 570.9(b)(i), notably "major mismatch" and "major deviation," could lead the inspector to reject tires that do not have exactly the tire size designation(s) specified by the vehicle manufacturer. NHTSA disagrees with this interpretation of the inspection procedure. The language allows the inspector to pass any vehicle equipped with tires that meet the published vehicle-manufacturer or RMA criteria for tire replacement. Tires with special characteristics such as extra wide sport type tires, "slicks", and extra low profile tires would not meet the criteria for replacement tires. The petition is, therefore, denied.

Both RMA and Firestone requested a change in the language of § 570.9(d)(i) which specified the use of an awl to probe cuts on tires as a method for evaluating the extent of tire damage. Firestone strongly recommended the use of a

"blunt instrument" rather than an awl to prevent further damage to the tire. The NHTSA feels that this is a constructive request, and the petition is granted.

RMA and GM requested a change in § 570.10(b) regarding the limits and the procedure for checking lateral and radial runout of wheel assemblies. GM contended, based on a survey of 500 vehicles of its employees, that the  $\frac{3}{32}$  in runout specification is too restrictive and that owners of vehicle with runouts of 0.050 to 0.225 in did not experience loss of air pressure or any detectable vibration. GM recommended a runout specification of at least  $\frac{1}{8}$  in. After reviewing the GM data, NHTSA has determined that the request is reasonable and, therefore, the petition is granted. Accordingly § 570.10(b) is amended to reflect the  $\frac{1}{8}$ -in radial and lateral runout limits.

Finally there were several requests to include provisions for non-matching spare or emergency tires, prohibition of radial-ply tire mix with any other tire type on the same vehicle, and recommendations for inclusion of minimum criteria for accuracy of test devices. Since these topics were not included in prior rulemaking notices, these recommendations will be considered for future action.

In consideration of the foregoing, 49 CFR Part 570, Vehicle In Use Inspection Standards, is amended. . . .

Effective date: May 9, 1974.

(Sec. 103, 108, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1397, 1401; delegation of authority at 49 CFR 1.51.)

Issued on April 3, 1974.

James B. Gregory  
Administrator

39 F.R. 12867  
April 9, 1974

## PREAMBLE TO AMENDMENT TO PART 570—VEHICLE IN USE INSPECTION STANDARDS

(Docket No. 73-9; Notice 7)

This notice amends Part 570, Vehicle in Use Inspection Standards, Chapter V, Title 49, Code of Federal Regulations by adding inspection standards and procedures for brake systems, steering and suspension systems, and tire and wheel assemblies for all motor vehicles with a gross vehicle weight rating that exceeds 10,000 pounds.

Interested persons have been afforded an opportunity to participate in the making of these amendments by a notice of proposed rulemaking published in the *Federal Register* on October 11, 1973 (38 CFR 28077), and due consideration has been given to all comments received in response to the notice.

A total of twenty-nine comments were received in response to the notice. These comments were submitted by State motor vehicle agencies, motor vehicle manufacturers, tire and brake equipment manufacturers, the Motor Vehicle Manufacturers Association, and the American Association of Motor Vehicle Administrators. The comments were predominantly in favor of periodic motor vehicle inspection, although problem areas in the inspection of vehicles over 10,000 pounds were presented.

An exemption for mobile homes from the proposed rulemaking action was requested by the Mobile Home Manufacturers Association who contended that since mobile homes are moved about 2.3 times during their life span and are constructed for use primarily as residential dwellings and not as motor vehicles for use on the highways, they should be excluded from the proposed regulation. The Recreational Vehicle Institute, however, suggested that different inspection frequencies for motor homes and recreational trailers as related to other commercial

vehicles would be appropriate. The NHTSA concludes that motor homes and recreational vehicles should not be excluded from periodic inspection, but the period between inspections should be determined by the States based on the requirements that may be unique to their particular jurisdiction.

The Professional Drivers Council suggested that inspection intervals should be based upon vehicle use, in lieu of calendar periods, in order to ensure adequate inspection frequency. They suggested 20,000 miles between inspections as a feasible criterion. Although NHTSA agrees that distance as well as time is an important criterion in determining inspection intervals, it has concluded that each State should determine inspection intervals based upon the driving conditions experienced by motor vehicles within its jurisdiction.

Many comments questioned the time required to check the brake system integrity of a hydraulic brake system, and suggested that the time of application be changed to 10 seconds. Since the purpose of this check is to determine whether there is any leakage of hydraulic fluid during operational conditions, and the consensus of comments indicates that this can be accomplished equally well during a 10-second test, the suggestion is adopted and § 570.55 will be worded accordingly.

Ford and MVMA requested that a brake pedal force be included in the brake pedal reserve check, and that a note be added regarding the effect of a vacuum booster on test validity. The suggestion to include a pedal force is considered valid, and § 570.55(c) will include a brake pedal force of 50 lbs. NHTSA concludes, however, that the terminology "full power (central hydraulic) brake system and brake systems de-

signed to operate with greater than 80% pedal travel" properly describes brake systems, and that a note to include a reference to a vacuum booster is not required.

Several comments suggested exemption of protective rings from consideration as part of a hose or tubing assembly. These have been found to have merit, and § 570.55(d) exempts protective rings or devices from consideration in regard to contact with vehicle body or chassis.

Several comments were received requesting clarification of the requirements of truck and trailer vacuum system checks in § 570.56. In response, this section has been rewritten to require the capability of at least one service brake application at a 50-pound brake pedal pressure after the engine has been turned off to verify operation of vacuum system. The inspection procedure has been revised to cover trailers equipped either with brake chamber rods or with enclosed chambers and hydraulic systems.

A large number of comments were received regarding § 570.57 (Air Brake System Integrity). This section has been altered from the proposal to change air pressure limits, time of test, and engine idling speed, thus clarifying the terminology and allowing test limits to more properly reflect operating conditions.

Comments on § 570.58 were submitted by Wagner and MVMA regarding wire gage and current capacity, sensing of surge force during test, and comparison of GVWR to capacity and number of brakes. The NHTSA concludes that § 570.58 properly covers these areas and that no change from the proposal is necessary.

Several comments were received on § 570.59, service brake system testing, regarding the feasibility of roller-type or drive-on platform testers for large vehicles, and questioning the 25-percent allowable imbalance of braking forces between wheels on same axle. Since the test procedure is designed to locate a serious imbalance condition, the NHTSA concludes that the recommended 25 percent or less imbalance requirement will provide the desired safety benefit. However, if future test data show that upgrading the requirement to a 20 percent maximum imbalance is warranted, NHTSA shall propose that the requirement be made more stringent.

The feasibility of inspection of brake linings and other internal components as compared to road testing was questioned by several commentators. While the optimum inspection of brake assemblies would require the removal of the wheels, the NHTSA has found that the removal of a wheel in most vehicles in the 10,000 pound and over GVWR class requires special skills and training, as well as replacement of oil seals, for reassembly. Therefore, this inspection procedure is limited to wheels which are equipped with inspection ports or access openings, thereby avoiding the need to remove the wheels.

Several comments were received regarding stopping distances of 35 feet versus 40 feet for combination vehicles and truck tractors for the road test at 20 mph. The present Bureau of Motor Carrier Safety standard is 40 feet, and NHTSA has decided that this value is adequate for safety purposes. The standard is worded accordingly.

In response to the comments received, the inspection procedure for checking front wheel steering linkage free play in § 570.60 is changed from the proposal to provide for proper testing of vehicles with and without power steering. Alignment limits are increased to 1.5 times the value listed in the vehicle manufacturer's service specification for alignment setting to allow for variations in vehicles due to age and differences in test equipment readouts.

Commentors on § 570.61, suspension system, requested clarification of the proposed requirement that "Springs shall not be broken or extended by spacers." This sentence is reworded to read "Springs shall not be broken and coil springs shall not be extended by spacers."

Several comments were received regarding tread depth requirements in § 570.62, and the number of places around the circumference of a tire where measurements should be taken. The standard is worded so as to measure tread depth in two adjacent major grooves at three locations spaced approximately 120 degrees apart for tires without tread wear indicators. A clarification was requested of the use of the terms "construction", "profile", and "nominal size" in describing tires and of the  $\frac{3}{8}$  in. limit on overall diameter.

In response, this section is worded to read "Vehicles should be equipped with tires on the same axle that are matched in construction and size designation, and dual tires shall be matched for overall diameter within one-half inch."

In consideration of the foregoing, 49 CFR Part 570, Vehicle In Use Inspection Standards, is amended by denoting the existing sections 570.1 through 570.10 as Subpart A, *Vehicles with GVWR of 10,000 Pounds or Less*, and by adding a new Subpart B, *Vehicles with GVWR of More Than 10,000 Pounds . . .*

Effective date: August 14, 1974. Since this part consists of standards for State inspection programs and does not directly impose require-

ments on any person, it is determined for good cause shown that an effective date earlier than 180 days after publication of the final rule is in the public interest.

(Secs. 103, 108, 119, Public Law 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1397, 1407; delegation of authority at 49 CFR 1.51.)

Issued on July 9, 1974.

James B. Gregory  
Administrator

**39 F.R. 26026**  
**July 16, 1974**



**PREAMBLE TO AMENDMENT TO PART 570—VEHICLE IN USE  
INSPECTION STANDARDS**

(Docket No. 73-9; Notice 8)

This notice amends Part 570, Subpart B, Vehicle in Use Inspection Standards, Motor Vehicles with a GVWR of More Than 10,000 Pounds, in Title 49, Code of Federal Regulations, by making it clear that the standard does not apply to mobile structure trailers.

On July 16, 1974, NHTSA promulgated Subpart B to Part 570 which consisted of vehicle in use standards for motor vehicles with a GVWR of more than 10,000 pounds (39 F.R. 26026). In response to the notice of proposed rulemaking which preceded it (38 F.R. 28077), the Mobile Homes Manufacturers Association (MHMA) commented that their data indicated that the average mobile home is moved once every 40 months or about 2.3 times during its life, that it spends less than 12 hours on the public roads during its 18 to 20 year life span, and that it spends 0.055% of its useful life on the highway. NHTSA concluded, therefore, that mobile structure trailers should not fall within the ambit of the standard at this time.

By letter of July 19, 1974, the Mobile Homes Manufacturers Association (MHMA) pointed out that while motor homes and recreational vehicles were specifically made subject to the standard, no reference was made to mobile structure trailers except to reiterate MHMA's comments to the proposed rule. To clarify this ambiguity and the agency's intent, § 510.53 is hereby amended . . . .

Effective date: August 13, 1974. Since this amendment does not impose requirements on any person and is meant to clarify a preceding rule, it is found for good cause shown that an immediate effective date is in the public interest.

(Secs. 103, 108, 119, Public Law 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1397, 1407; delegation of authority at 49 CFR 1.51.)

Issued on August 7, 1974.

James B. Gregory  
Administrator

**39 F.R. 28980  
August 13, 1974**



## PREAMBLE TO AMENDMENT TO PART 570—VEHICLE IN USE INSPECTION STANDARDS

(Docket No. 73-9; Notice 9)

This notice responds to petitions for reconsideration of Vehicle in Use Inspection Standards for vehicles with a GVWR of more than 10,000 pounds.

NHTSA issued on July 16, 1974, the vehicle in use inspection standards to be implemented by the States for vehicles with a GVWR of more than 10,000 pounds (39 F.R. 26026). Subsequently, petitions for reconsideration were received from Ford Motor Company (Ford), General Motors Corporation (GM), the Motor Vehicle Manufacturers Association (MVMA), the Midland-Ross Corporation (Midland) and the Bendix-Westinghouse Corporation (Bendix). The NHTSA response to matters raised in these petitions will be given by subject grouping.

### *Brake Pedal Reserve*

Ford has called the attention of NHTSA to a typographical error in the formula shown in subparagraph 570.55(c)(1) and used for computing the brake pedal reserve. Instead of the relationship  $\frac{A-B}{A \times 100}$ , the formula should be shown as  $\frac{A-B}{A} \times 100$ . The standard will be corrected accordingly.

Midland petitioned to revise the wording in paragraph 570.55(c) to require vehicles with modified vehicle brake systems, such as with an additional tag axle utilizing existing hydraulic brake fluid capacity, to meet the requirements of the brake pedal reserve test. Currently, this test is waived for all vehicles with brake systems designed to operate with greater than 80 percent pedal travel, whether through original design or modification. Since it was NHTSA's original intent that the waiver apply only when the original manufacturer's design criteria established pedal travel at greater than 80%, this

petition is granted, and the second sentence of paragraph 570.55(c) is amended to read:

"The brake pedal reserve test is not required for vehicles with brake systems designed by the original vehicle manufacturer to operate with greater than 80 percent pedal travel."

### *Air Brake System Integrity*

Ford petitioned to expand Table 1 (Air brake system pressure build-up time) to include vehicles equipped with reservoirs of smaller capacities and varying designs, such as vehicles that use wedge brakes and the newly-developed compact brake chambers. Further, GM recommended that the values in Table 1 representing total reservoir volume be separated by 1 cubic inch to avoid column overlapping and resultant errors in utilizing the tables. The NHTSA concurs with these suggestions, and Table 1 is expanded to include requirements for 9-inch and 12-inch brake chambers and the columnar reservoir volume range values are separated by 1 cubic inch.

GM questioned the chamber volumes used in Table 1 as "not reflecting a substantial portion of industry usage." This question was also discussed by Midland-Ross, which submitted chamber area volume figures ranging from 16 inches to 36 inches. Likewise, Bendix submitted volume figures which were consistent with those submitted by Midland-Ross. The Midland-Ross petition also suggested that to be fair to all manufacturers, the reservoir build-up times as shown in Table 1 should be increased by a factor of 20 percent to compensate for normal compressor wear and deterioration. NHTSA concurs in these views, and Table 1 is amended to utilize composite volume figures deemed representative of industry practice for the representative brake chambers as shown in Table 2 below:

TABLE 2.—Chamber Volumes for Representative Brake Chambers

Chamber Size (Inches)	Volume (Cubic Inches)
9	18
12	25
16	43
20	51
24	66
30	88
36	125

Further, the following formula is established to compute the time in seconds:

$$\text{Time (Seconds)} = \frac{\text{Actual Reservoir Capacity} \times 25 \times 1.20}{\text{Required Reservoir Capacity}}$$

Bendix petitioned for the use of only a single maximum time figure of 30 seconds for an increase in the air pressure from 85 to 100 psi in the reservoirs with the engine running at the vehicle manufacturer's maximum recommended number of revolutions per minute. Although this requirement would simplify Table 1, it would not cover all of the combinations of brake chambers and reservoirs used in the trucking industry. NHTSA therefore concludes that Table 1 is necessary, and Bendix's petition is accordingly denied.

MVMA in its petition pointed out the problems involved in requiring the inspector to identify the number and size of brake chambers and the number and size of the reservoirs before he could use Table 1. In the judgment of this agency, it is not an unreasonable burden on the truck owner or operator to provide this readily-available information to an inspector at the time of inspection. MVMA's petition is therefore denied.

Midland petitioned to revise paragraph 570.57 (a)(1) to assure conformity of test conditions between FMVSS 121 and the air brake system pressure build-up test of Table 1. This request is considered valid, and paragraph 570.57(a)(1) is revised to read: "The air brake system compressor shall increase the air pressure in the

truck or truck tractor reservoir(s) from 85 to 100 psi in not more than the time specified in Table 1, with the engine running at the vehicle manufacturer's maximum recommended number of revolutions per minute."

Ford petitioned for the elimination of 570.61(b), Shock absorber condition, contending that shock absorbers do not affect the safety of all large motor vehicles, are offered only to improve operator comfort and have only a minimal effect on vehicle stability. Although the relationship between comfort and control may be hard to define, NHTSA concludes that the operator's response to varying loads, weather conditions, and road conditions is affected by the condition of the shock absorbers on the motor vehicle being driven. Further, results of two test programs carried out by NHTSA indicate that shock absorber degradation does have an effect on the handling characteristics of motor vehicles. Therefore, based on currently available data, NHTSA concludes that the shock absorbers are a contributing factor to safe motor vehicle operations, and Ford's petition is denied.

In consideration of the foregoing, 49 CFR Part 570, Subpart B, Motor Vehicles With a GVWR of More Than 10,000 Pounds, is amended as follows:

*Effective date:* February 4, 1975. Because the amendments correct errors and modify inspection procedures, but create no additional burden, it is found for good cause shown that they should be effective immediately on publication.

(Secs. 103, 108, 119, Pub. L. 84-563, 80 Stat. 718; 15 U.S.C. 1392, 1397, 1401; delegation of authority at 49 CFR 1.51)

Issued on January 24, 1975.

Noel C. Bufe  
Acting Administrator

40 F.R. 5159  
February 4, 1975

## PART 570—VEHICLE IN USE INSPECTION STANDARDS

## Subpart A—Vehicles With GVWR of 10,000 Pounds or Less

- 570.1 Scope
- 570.2 Purpose
- 570.3 Applicability
- 570.4 Definitions
- 570.5 Service brake system
- 570.6 Brake power unit
- 570.7 Steering systems
- 570.8 Suspension systems
- 570.9 Tires
- 570.10 Wheel assemblies

**AUTHORITY:** Secs. 103, 108, 119, Public Law 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1397, 1407; delegation of authority at 49 CFR 1.51.

**§ 570.1 Scope.** This part specifies standards and procedures for inspection of hydraulic service brake systems, steering and suspension systems, and tire and wheel assemblies of motor vehicles in use.

**§ 570.2 Purpose.** The purpose of this part is to establish criteria for the inspection of motor vehicles by State inspection systems, in order to reduce death and injuries attributable to failure or inadequate performance of motor vehicle systems.

**§ 570.3 Applicability.** This part does not in itself impose requirements on any person. It is intended to be implemented by States through the highway safety program standards issued under the Highway Safety Act (23 U.S.C. 402) with respect to inspection of motor vehicles with gross vehicle weight rating of 10,000 pounds or less, except motorcycles or trailers.

**§ 570.4 Definitions.** Unless otherwise indicated, all terms used in this part that are defined

in 49 CFR Part 571, Motor Vehicle Safety Standards, are used as defined in that part.

**§ 570.5 Service brake system.** [Unless otherwise noted, the force to be applied during inspection procedures to power-assisted and full-power brake systems is 25 lb, and to all other systems, 50 lb. (39 F.R. 12867—April 9, 1974. Effective: 5/9/74)]

(a) *Failure indicator.* The brake system failure indicator lamp, if part of a vehicle's original equipment, shall be operable. (This lamp is required by Federal Motor Vehicle Safety Standard No. 105, 49 CFR 571.105, on every new passenger car manufactured on or after January 1, 1968, and on other types of motor vehicles manufactured on or after September 1, 1975.)

*Inspection procedure.* Apply the parking brake and turn the ignition to start, or verify lamp operation by other means indicated by the vehicle manufacturer that the brake system failure indicator lamp is operable.

(b) *Brake system integrity.* The brake system shall demonstrate integrity as indicated by no perceptible decrease in pedal height under a 125 pound force applied to the brake pedal or by no illumination of the brake system failure indicator lamp. The brake system shall withstand the application of force to the pedal without failure of any line or other part.

*Inspection procedure.* With the engine running on vehicles equipped with power brake systems, and the ignition turned to "on" in other vehicles, apply a force of 125 pounds to the brake pedal and hold for 10 seconds. Note any decrease in pedal height, and whether the lamp illuminates.

(c) *Brake pedal reserve.* When the brake pedal is fully depressed, the distance that the pedal has traveled from its free position shall

be not greater than 80 percent of the total distance from its free position to the floorboard or other object that restricts pedal travel.

*Inspection procedure.* Measure the distance (A) from the free pedal position to the floorboard or other object that restricts brake pedal travel. Depress the brake pedal, and with the force applied measure the distance (B) from the depressed pedal position to the floorboard or other object that restricts pedal travel. Determine the percentage as  $\frac{A-B}{A} \times 100$ . The engine must

be operating when power-assisted brakes are checked. The pedal reserve check is not required for vehicles equipped with full-power (central hydraulic) brake systems, or to vehicles with brake systems designed to operate with greater than 80 percent pedal travel.

(d) *Service brake performance.* Compliance with one of the following performance criteria will satisfy the requirements of this section. Verify that tire inflation pressure is within the limits recommended by vehicle manufacturer before conducting either of the following tests.

(1) *Roller-type or drive-on platform tests.*

The force applied by the brake on a front wheel or a rear wheel shall not differ by more than 20 percent from the force applied by the brake on the other front wheel or the other rear wheel respectively.

*Inspection procedure.* The vehicle shall be tested on a drive-on platform, or a roller-type brake analyzer with the capability of measuring equalization. The test shall be conducted in accordance with the test equipment manufacturer's specifications. Note the left to right brake force variance.

(2) *Road test.* The service brake system shall stop the vehicle in a distance of 25 feet or less from a speed of 20 miles per hour without leaving a 12-foot-wide lane.

*Inspection procedure.* The road test shall be conducted on a level (not to exceed plus or minus one percent grade) dry, smooth, hard-surfaced road that is free from loose material, oil or grease. The service brakes shall be applied at a vehicle speed of 20 miles per hour and the vehicle shall be brought to a stop as specified. Measure the distance required to stop.

(e) *Brake hoses and Assemblies.* [Brake hoses shall not be mounted so as to contact the vehicle body or chassis. Hoses shall not be cracked, chafed, or flattened. Protective devices, such as "rub rings," shall not be considered part of the hose or tubing. (39 F.R. 12867—April 9, 1974. Effective: 5/9/74)]

*Inspection procedure.* Examine visually, inspecting front brake hoses through all wheel positions from full left to full right for conditions indicated.

[NOTE: to inspect for (f), (g), and (h) below, remove at a minimum one front wheel and one rear wheel.]

(f) *Disc and drum condition.* If the drum is embossed with a maximum safe diameter dimension or the rotor is embossed with a minimum safety thickness dimension, the drum or disc shall be within the appropriate specifications. These dimensions will be found on motor vehicles manufactured since January 1, 1971, and may be found on vehicles manufactured for several years prior to that time. If the drums and discs are not embossed the drums and discs shall be within the manufacturer's specifications.

*Inspection procedure.* Examine visually for condition indicated, measuring as necessary.

(g) *Friction materials.* On each brake the thickness of the lining or pad shall not be less than one thirty-second of an inch over the rivet heads, or the brake shoe on bonded linings or pads. Brake linings and pads shall not have cracks or breaks that extend to rivet holes except minor cracks that do not impair attachment. Drum brake linings shall be securely attached to brake shoes. Disc brake pads shall be securely attached to shoe plates.

*Inspection procedure.* Examine visually for conditions indicated, and measure height of rubbing surface of lining over rivet heads. Measure bonded lining thickness over shoe surface at the thinnest point on the lining or pad.

(h) *Structural and mechanical parts.* Backing plates and caliper assemblies shall not be deformed or cracked. System parts shall not be broken, misaligned, missing, binding, or show evidence of severe wear. Automatic adjusters and other parts shall be assembled and installed correctly.

*Inspection procedure.* Examine visually for conditions indicated.

**§ 570.6 Brake power unit.** Vacuum hoses shall not be collapsed, abraded, broken, improperly mounted or audibly leaking. With residual vacuum exhausted and a constant 25 pound force on the brake pedal, the pedal shall fall slightly when the engine is started, demonstrating integrity of the power assist system. This test is not applicable to vehicles equipped with full power brake system as the service brake performance test shall be considered adequate test of system performance.

*Inspection procedure.* With engine running, examine hose visually and aurally for conditions indicated. Stop engine and apply service brakes several times to destroy vacuum in system. Depress brake pedal with 25 pounds of force and while maintaining that force, start the engine. If brake pedal does not fall slightly under force when the engine starts, there is a malfunction in the power assist system.

**§ 570.7 Steering systems.**

(a) *System play.* Lash or free play in the steering system shall not exceed values shown in Table 1.

*Inspection procedure.* With the engine on and the wheels in the straight ahead position, turn the steering wheel in one direction until there is a perceptible movement of a front wheel. If a point on the steering wheel rim moves more than the value shown in Table 1 before perceptible return movement of the wheel under observation, there is excessive lash or free play in the steering system.

TABLE 1.—Steering System Free Play Values

<i>Steering Wheel Diameter (In.)</i>	<i>Lash (In.)</i>
16 or less	2
18	2¼
20	2½
22	2¾

(b) *Linkage play.* Free play in the steering linkage shall not exceed one-quarter of an inch.

*Inspection procedure.* Elevate the front end of the vehicle to load the ball joints. Insure that wheel bearings are correctly adjusted. Grasp the

front and rear of a tire and attempt to turn the tire and wheel assembly left and right. If the free movement at the front or rear tread of the tire exceeds one-quarter inch there is excessive steering linkage play.

(c) *Free turning.* Steering wheels shall turn freely through the limit of travel in both directions.

*Inspection procedure.* Turn the steering wheel through the limit of travel in both directions. Feel for binding or jamming in the steering gear mechanism.

(d) *Alignment.* [Toe-in and toe-out measurements shall not be greater than 1.5 times the value listed in the vehicle manufacturer's service specification for alignment setting.

*Inspection procedure.* Verify that toe-in or toe-out is not greater than 1.5 times the values listed in the vehicle manufacturer's service specifications for alignment settings as measured by a bar-type scuff gauge or other toe-in measuring device. Values to convert toe-in readings in inches to scuff gauge readings in ft/mi side-slip for different wheel sizes are provided in Table 2. Tire diameters used in computing scuff gauge readings are based on the average maximum tire dimensions of grown tires in service for typical wheel and tire assemblies. (39 F.R. 12867—April 9, 1974. Effective: 5/9/74)]

(e) *Power steering system.* The power steering system shall not have cracked or slipping belts, or insufficient fluid in the reservoir.

*Inspection procedure.* Examine fluid reservoir and pump belts for conditions indicated.

**§ 570.8 Suspension systems.**

(a) *Suspension condition.* Ball joint seals shall not be cut or cracked. Structural parts shall not be bent or damaged. Stabilizer bars shall be connected. Springs shall not be broken, or extended by spacers. Shock absorber mountings, shackles, and U-bolts shall be securely attached. Rubber bushings shall not be cracked, extruded out from or missing from suspension joints. Radius rods shall not be missing or damaged.

*Inspection procedure.* Examine front and rear end suspension parts for conditions indicated.

TABLE 2.—Toe-In Settings From Vehicle MFR's Service Specifications

Wheel Size (In)	Nominal Tire Diameter (In)	Readings In Feet Per Mile Sidestip								
		1/16''	1/8''	3/16''	1/4''	5/16''	3/8''	7/16''	1/2''	5/8''
13	25.2	13.1	26.2	39.3	52.4	65.5	78.6	91.7	104.8	117.9
14	26.4	12.5	25.0	37.5	50.0	62.5	75.0	87.5	100.	112.5
15	28.5	11.5	23.0	34.5	46.0	57.5	69.0	80.5	92.0	103.5
16	35.6	9.3	18.6	27.9	37.2	46.5	55.8	65.1	74.4	83.7

[(39 F.R. 12867—April 9, 1974. Effective: 5/9/74)]

(b) *Shock absorber condition.* There shall be no oil on the shock absorber housing attributable to leakage by the seal, and the vehicle shall not continue free rocking motion for more than two cycles.

*Inspection procedure.* Examine shock absorbers for oil leaking from within, then with vehicle on a level surface, push down on one end of vehicle and release. Note number of cycles of free rocking motion. Repeat procedure at other end of vehicle.

#### § 570.9 Tires.

(a) *Tread depth.* The tread on each tire shall be not less than two thirty-seconds of an inch deep.

*Inspection procedure.* Passenger car tires have tread depth indicators that become exposed when tread depth is less than two thirty-seconds of an inch. Inspect for indicators in any two adjacent major grooves at three locations spaced approximately equally around the outside of the tire. For vehicles other than passenger cars it may be necessary to measure tread depth with a tread gauge.

(b) *Type.* [Vehicle shall be equipped with tires on the same axle that are matched in tire size designation, construction, and profile.

*Inspection procedure.* Examine visually. A major mismatch in tire size designation, construction, and profile between tires on the same axle, or a major deviation from the size as recommended by the manufacturer (e.g. as indicated on the glove box placard on 1968 and later passenger

cars) are causes for rejection. (39 F.R. 12867—April 9, 1974. Effective: 5/9/74)]

(c) *General condition.* Tires shall be free from chunking, bumps, knots, or bulges evidencing cord, ply, or tread separation from the casing or other adjacent materials.

(d) *Damage.* Tire cords or belting materials shall not be exposed, either to the naked eye or when cuts or abrasions on the tire are probed.

*Inspection procedures.* [Examine visually for conditions indicated, using a blunt instrument if necessary to probe cuts or abrasions. (39 F.R. 12867—April 9, 1974. Effective: 5/9/74)]

#### § 570.10 Wheel assemblies.

(a) *Wheel integrity.* A tire rim, wheel disc, or spider shall have no visible cracks, elongated bolt holes or indication of repair by welding.

*Inspection procedure.* Examine visually for conditions indicated.

(b) *Deformation.* [The lateral and radial runout of each rim bead area shall not exceed one-eighth of an inch of total indicated runout.

*Inspection procedure.* Using a runout indicator gauge, and a suitable stand, measure lateral and radial runout of rim bead through one full wheel revolution and note runout in excess of one-eighth of an inch. (39 F.R. 12867—April 9, 1974. Effective: 5/9/74)]

(c) *Mounting.* All wheel nuts and bolts shall be in place and tight.

*Inspection procedure.* Check wheel retention for conditions indicated.

38 F.R. 23949  
September 5, 1973

**Subpart B—Vehicles With GVWR of More Than 10,000 Pounds**

- 570.51 Scope
- 570.52 Purpose
- 570.53 Applicability
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- 570.55 Hydraulic brake system
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**AUTHORITY:** Secs. 103, 108, 119, Public Law 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1397, 1407; delegation of authority at 49 CFR 1.51.

§ 570.51 **Scope.** This part specifies standards and procedures for the inspection of brake, steering and suspension systems, and tire and wheel assemblies, of motor vehicles in use with a gross vehicle weight rating of more than 10,000 pounds.

§ 570.52 **Purpose.** The purpose of this part is to establish criteria for the inspection of motor vehicles through State inspection programs, in order to reduce deaths and injuries attributable to failure or inadequate performance of the motor vehicle systems covered by this part.

§ 570.53 **Applicability.** [This part does not in itself impose requirements on any person. It is intended to be implemented by States through the highway safety program standards issued under the Highway Safety Act (23 U.S.C. 402) with respect to inspection of motor vehicles with gross vehicle weight rating greater than 10,000 pounds, except mobile structure trailers. (39 F.R. 28980—August 13, 1974. Effective: 8/13/74)]

§ 570.54 **Definitions.** Unless otherwise indicated, all terms used in this part that are defined in 49 CFR Part 571, Motor Vehicle Safety Standards, are used as defined in that part.

“Air-over-hydraulic brake subsystem” means a subsystem of the air brake that uses compressed air to transmit a force from the driver control to a hydraulic brake system to actuate the service brakes.

“Electric brake system” means a system that uses electric current to actuate the service brake.

“Vacuum brake system” means a system that uses a vacuum and atmospheric pressure for transmitting a force from the driver control to the service brake, but does not include a system that uses vacuum only to assist the driver in applying muscular force to hydraulic or mechanical components.

§ 570.55 **Hydraulic brake system.** The following requirements apply to vehicles with hydraulic brake systems.

(a) *Brake system failure indicator.* The hydraulic brake system failure indicator lamp, if part of a vehicle's original equipment, shall be operable.

*Inspection procedure.* Apply the parking brake and turn the ignition to start to verify that the brake system failure indicator lamp is operable, or verify by other means recommended by the vehicle manufacturer.

(b) *Brake system integrity.* The hydraulic brake system shall demonstrate integrity as indicated by no perceptible decrease in pedal height under a 125-pound force applied to the brake pedal and by no illumination of the brake system failure indicator lamp. The brake system shall withstand the application of force to the pedal without failure of any tube, hose or other part.

*Inspection procedure.* With the engine running in vehicles equipped with power brake systems and the ignition turned to “on” in other vehicles, apply a force of 125 pounds to the brake pedal and hold for 10 seconds. Note any additional decrease in pedal height after the initial decrease, and whether the brake system failure indicator lamp illuminates.

(c) *Brake pedal reserve.* When the brake pedal is depressed with a force of 50 pounds, the distance that the pedal has traveled from its free position shall be not greater than 80 percent of the total distance from its free position to the

floorboard or other object that restricts pedal travel. The brake pedal reserve test is not required for vehicles with brake systems designed by the original vehicle manufacturer to operate with greater than 80 percent pedal travel. (40 F.R. 5159—February 4, 1975. Effective 2/4/75) ]

*Inspection procedure.* Measure the distance (A) from the free pedal position to the floorboard or other object that restricts brake pedal travel. Depress the brake pedal, and with the force applied measure the distance (B) from the depressed pedal position to the floorboard or other object that restricts pedal travel. Determine the pedal travel percentage as  $\frac{A-B}{A} \times 100$ .

The engine must be operating when power-assisted brakes are checked.

(d) *Brake hoses, master cylinder, tubes and tube assemblies.* Hydraulic brake hoses shall not be mounted so as to contact the vehicle body or chassis. Hoses shall not be cracked, chafed, or flattened. Brake tubes shall not be flattened or restricted. Brake hoses and tubes shall be attached or supported to prevent damage by vibration or abrasion. Master cylinder shall not show signs of leakage. Hose or tube protective rings or devices shall not be considered part of the hose or tubing.

*Inspection procedure.* Examine visually brake master cylinder, hoses and tubes, including front brake hoses, through all wheel positions from full left turn to full right turn for conditions indicated.

**§ 570.56 Vacuum brake assist unit and vacuum brake system.** The following requirements apply to vehicles with vacuum brake assist units and vacuum brake systems.

(a) *Vacuum brake assist unit integrity.* The vacuum brake assist unit shall demonstrate integrity as indicated by a decrease in pedal height when the engine is started and a constant 50-pound force is maintained on the pedal.

*Inspection procedure.* Stop the engine and apply service brake several times to destroy vacuum in system. Depress the brake pedal with 50 pounds of force and while maintaining that force, start the engine. If the brake pedal does not move slightly under force when the engine starts, there is a malfunction in the power assist unit.

(b) *Low-vacuum indicator.* If the vehicle has a low-vacuum indicator, the indicator activation level shall not be less than 8 inches of mercury.

*Inspection procedure.* Run the engine to evacuate the system fully. Shut off the engine and slowly reduce the vacuum in the system by moderate brake applications until the vehicle gauge reads 8 inches of mercury. Observe the functioning of the low-vacuum indicator.

(c) *Vacuum brake system integrity.* The vacuum brake system shall demonstrate integrity by meeting the following requirements: (1) The vacuum brake system shall provide vacuum reserve to permit one service brake application with a brake pedal force of 50 pounds after the engine is turned off without actuating the low vacuum indicator. (2) Trailer vacuum brakes shall operate in conjunction with the truck or truck tractor brake pedal.

*Inspection procedure.* Check the trailer vacuum system by coupling trailer(s) to truck or truck tractor and opening trailer shutoff valves. Start the engine and after allowing approximately 1 minute to build up the vacuum, apply and release the brake pedal. In the case of trailer brakes equipped with brake chamber rods, observe the chamber rod movement. Run the engine to re-establish maximum vacuum, then shut off the engine and apply the brakes with a 50-pound force on the brake pedal. Note the brake application and check for low-vacuum indicator activation.

For a combination vehicle equipped with breakaway protection and no reservoir on the towing vehicle supply line, close the supply line shutoff valve and disconnect the supply line. Apply a 50-pound force to the brake pedal on the towing vehicle and release. Trailer brakes should remain in the applied position.

(d) *Vacuum system hoses, tubes and connections.* Vacuum hoses, tubes and connections shall be in place and properly supported. Vacuum hoses shall not be collapsed, cracked or abraded.

*Inspection procedure.* With the engine running, examine hoses and tubes for the conditions indicated and note broken or missing clamps.

TABLE 1. AIR BRAKE SYSTEM PRESSURE BUILD-UP TIME  
(85 to 100 Pounds Per Square Inch)

System		Time in Seconds*																		
		Installed Brake Reservoir Volume in Cubic Inches																		
Front axle number and size chambers	Rear axle number and size chambers	(1) Required Volume	30 Vol	1000 1251 1500	1501 1750	1751 2000	2001 2500	2501 3000	3001 3500	3501 4000	4001 4500	4501 5000	5001 5500	5501 6000	6001 6500	6501 7000	7001 7500	7501 8000	8001 8500	
(2) 9	(4) 9	1296	.0232	26	32	38	43	52	64	76	87	99	110	122	80	87	94	101	108	115
(2) 9	(8) 9	2160	.0139	-	-	22	26	31	38	45	52	59	66	73	-	-	-	-	-	-
(2) 9	(2) 12	1032	.0029	32	40	47	54	65	80	94	109	123	-	-	-	-	-	-	-	-
(2) 9	(4) 12	1632	.0184	21	25	30	35	41	51	60	69	78	87	97	106	115	124	131	138	145
(4) 9	(8) 9	2592	.0116	-	-	-	-	26	32	38	43	49	55	61	67	72	79	84	90	96
(2) 12	(8) 9	3262	.0092	-	-	-	-	21	25	30	34	39	44	48	53	58	62	68	72	76
(2) 12	(8) 9	2328	.0129	-	-	21	24	29	36	42	48	55	61	68	74	81	87	94	100	-
(2) 12	(4) 12	1800	.0167	-	23	27	31	37	46	54	62	71	79	87	96	105	113	121	-	-
(2) 12	(8) 12	3000	.0100	-	-	-	-	-	27	32	37	42	48	52	57	62	67	72	77	82
(2) 12	(2) 16	1632	.0184	-	25	30	34	41	51	60	69	78	87	97	106	115	124	-	-	-
(2) 12	(4) 16	2670	.0113	-	-	-	21	25	31	37	42	48	54	59	65	71	76	82	88	94
(4) 12	(8) 9	2930	.0102	-	-	-	-	23	28	33	38	43	49	53	59	64	69	74	79	84
(4) 12	(8) 12	3600	.0084	-	-	-	-	-	23	27	31	35	40	44	48	52	56	61	65	69
(2) 16	(8) 9	2762	.0109	-	-	-	-	24	30	35	41	46	52	57	63	68	74	79	84	90
(2) 16	(4) 12	2238	.0134	-	-	22	25	30	37	43	50	57	64	70	77	84	90	97	104	111
(2) 16	(8) 12	3430	.0088	-	-	-	-	-	24	29	33	37	42	46	50	55	59	64	68	72
(2) 16	(2) 24	2620	.0115	-	-	-	22	26	32	37	43	49	55	60	65	72	78	83	89	95
(2) 16	(4) 24	4200	.0072	-	-	-	-	-	20	23	27	30	34	38	41	45	48	52	55	59
(2) 16	(2) 30	3144	.0096	-	-	-	-	-	26	31	36	41	46	50	55	60	65	70	75	80
(2) 16	(4) 30	5256	.0057	-	-	-	-	-	18	21	24	27	30	33	36	39	41	44	47	49
(2) 20	(2) 24	2800	.0107	-	-	-	20	24	30	35	40	45	51	56	61	67	72	77	83	88
(2) 20	(4) 24	4380	.0069	-	-	-	-	-	22	26	29	33	36	40	43	47	50	53	57	60
(2) 20	(2) 30	3336	.0090	-	-	-	-	-	25	29	34	38	42	47	52	56	61	65	70	74
(2) 20	(4) 30	5448	.0055	-	-	-	-	-	20	23	26	29	32	34	37	40	43	46	49	52
(2) 24	(2) 24	3180	.0095	-	-	-	-	21	26	31	35	40	45	50	55	59	64	69	74	79
(2) 24	(4) 24	4750	.0063	-	-	-	-	-	20	24	27	30	33	36	39	42	46	49	52	55
(2) 24	(2) 30	3700	.0081	-	-	-	-	-	22	26	30	34	38	42	46	50	55	59	63	67
(2) 24	(4) 30	5800	.0052	-	-	-	-	-	22	26	30	32	35	37	40	43	46	49	52	55
(2) 30	(2) 30	4224	.0071	-	-	-	-	-	-	23	26	30	34	37	41	44	48	51	55	59
(2) 30	(4) 30	6336	.0047	-	-	-	-	-	-	-	27	30	33	37	41	45	49	53	57	61
(2) 30	(2) 36	5112	.0059	-	-	-	-	-	-	-	22	25	28	31	34	37	40	43	46	49

\*Time (Seconds) - Actual Reservoir Capacity x (25 x 1.20)  
Required Reservoir Capacity

(1) Required Volume

(a) Volumes for respective chamber sizes listed in Table 2  
(b) Required volume based on 12:1 ratio (SAE J813)

§ 570.57 **Air brake system and air-over-hydraulic brake subsystem.** The following requirements apply to vehicles with air brake and air-over-hydraulic brake systems. Trailer(s) must be coupled to a truck or truck-tractor for the purpose of this inspection, except as noted.

(a) *Air brake system integrity.* The air brake system shall demonstrate integrity by meeting the following requirements:

(1) [The air brake system compressor shall increase the air pressure in the truck or truck trailer reservoir(s) from 85 to 100 psi in not more than the time specified in Table 1, with the engine running at the vehicle manufacturer's maximum recommended number of revolutions per minute. (40 F.R. 5159—February 4, 1975. Effective: 2/4/75)]

(2) The warning device (visual or audible) connected to the brake system air pressure source shall be activated when air pressure is lowered to not less than 50 psi. For vehicles manufactured to conform to Federal Motor Vehicle Safety Standard No. 121 (generally vehicles manufactured on or after March 1, 1975), the low-pressure indicator shall be activated when air pressure is lowered to not less than 60 psi.

(3) The governor cut-in pressure shall be not lower than 80 psi, and the cut-out pressure shall be not higher than 135 psi, unless other values are recommended by the vehicle manufacturer.

(4) With the vehicle in a stationary position, compressed air reserve shall be sufficient to permit one full service brake application, after the engine is stopped and with the system fully charged, without lowering reservoir pressure more than 20 percent below the initial reading.

(5) Air brake pressure shall not drop more than 2 psi in 1 minute for single vehicles or more than 3 psi in 1 minute for combination vehicles, with the engine stopped and service brakes released. Allow a 1-psi drop in 1 minute for each additional towed vehicle.

(6) With the reservoir(s) fully charged, air pressure shall not drop more than 3 psi in 1 minute for single vehicles or more than 4 psi in 1 minute for combination vehicles, with the engine stopped and service brakes fully applied. Allow a 1-psi pressure drop in 1 minute for each additional towed vehicle.

TABLE 2.—Chamber Volumes for Representative Brake Chambers

Chamber Size (Inches)	Volume (Cubic Inches)
9	18
12	25
16	43
20	51
24	66
30	88
36	125

[(40 F.R. 5159—February 4, 1975. Effective: 2/4/75)]

(7) The compressor drive belt shall not be badly worn or frayed and belt tension shall be sufficient to prevent slippage.

*Inspection procedure.* With the air system charged, open the drain cocks in the service and supply reservoir on the truck or truck-tractor. Note the pressure at which the visual or audible warning device connected to the low-pressure indicator is activated. Close the drain cocks and, with the trailer(s) uncoupled, check air pressure build-up at the manufacturer's recommended engine speed. Observe the time required to raise the air pressure from 85 to 100 psi. Continue running the engine until the governor cuts out and note the pressure. Reduce engine speed to idle, couple the trailer(s), if applicable, and make a series of brake applications. Note the pressure at which the governor cuts in. Increase engine speed to fast idle and charge the system to its governed pressure. Stop the engine and record the pressure drop in psi per minute with brakes released and with brakes fully applied.

(b) *Air brake system hoses, tubes and connections.* Air system tubes, hoses and connections shall not be restricted, cracked or improperly supported, and the air hose shall not be abraded.

*Inspection procedure.* Stop the engine and examine air hoses, tubes and connections visually for conditions specified.

(c) *Air-over-hydraulic brake subsystem integrity.* The air-over-hydraulic brake subsystem shall demonstrate integrity by meeting the following requirements:

(1) The air compressor shall increase the pressure in the reservoir(s) from 85 to 100 psi in not more than the time specified in Table 1 with the engine running at the vehicle manufac-

turer's maximum recommended number of revolutions per minute.

(2) The warning device (visual or audible) connected to the brake system air pressure source shall be activated when the air pressure is lowered to not less than 50 psi.

(3) The governor cut-in pressure shall be not lower than 80 psi, and the cut-out pressure shall not be higher than 135 psi, unless other values are recommended by the vehicle manufacturer.

(4) Air brake pressure shall not drop more than 2 psi in 1 minute for single vehicles or more than 3 psi in 1 minute for combination vehicles, with the engine stopped and service brakes released. Allow a 1-psi drop per minute for each additional towed vehicle.

(5) With the reservoir(s) fully charged, air pressure shall not drop more than 3 psi in 1 minute for single vehicles or more than 4 psi in 1 minute for combination vehicles, with the engine stopped and service brakes fully applied. Allow a 1-psi pressure drop in 1 minute for each additional towed vehicle.

(6) The compressor drive belt shall not be badly worn or frayed and belt tension shall be sufficient to prevent slippage.

*Inspection procedure.* With the air system charged, open the drain cocks in the service and supply reservoir on the truck or truck-tractor. Note the pressure at which the visual or audible warning device connected to the low pressure indicator is activated. Close the drain cocks and, with the trailers uncoupled, check air pressure build up at the manufacturer's recommended engine speed. Observe the time required to raise the air pressure from 85 to 100 psi. Continue running the engine until the governor cuts out and note the pressure. Reduce engine speed to idle, couple trailers, and make a series of brake applications. Note the pressure at which the governor cuts in. Increase engine speed to fast idle and charge the system to its governed pressure. Stop the engine and record the pressure drop in psi per minute with brakes released and with brakes fully applied.

(d) *Air-over-hydraulic brake subsystem hoses, master cylinder, tubes and connections.* System tubes, hoses and connections shall not be cracked or improperly supported, the air and hydraulic

hoses shall not be abraded and the master cylinder shall not show signs of leakage.

*Inspection procedure.* Stop the engine and examine air and hydraulic brake hoses, brake master cylinder, tubes and connections visually for conditions specified.

#### § 570.58 Electric brake system.

(a) *Electric brake system integrity.* The average brake amperage value shall be not more than 20 percent above, and not less than 30 percent below, the brake manufacturer's maximum current rating. In progressing from zero to maximum, the ammeter indication shall show no fluctuation evidencing a short circuit or other interruption of current.

*Inspection procedure.* Insert a low range (0 to 25 amperes for most 2- and 4-brake systems and 0 to 40 amperes for a 6-brake system) d.c. ammeter into the brake circuit between the controller and the brakes. With the controller in the "off" position, the ammeter should read zero. Gradually apply the controller to the "full on" position for a brief period (not to exceed 1 minute) and observe the maximum ammeter reading. Gradually return the controller to "full off" and observe return to zero amperes. Divide the maximum ammeter reading by the number of brakes and determine the brake amperage value.

(b) *Electric brake wiring condition.* Electric brake wiring shall not be frayed. Wiring clips or brackets shall not be broken or missing. Terminal connections shall be clean. Conductor wire gauge shall not be below the brake manufacturer's minimum recommendation.

*Inspection procedure.* Examine visually for conditions specified.

#### § 570.59 Service brake system.

(a) *Service brake performance.* Compliance with any one of the following performance criteria will satisfy the requirements of this section. Verify that tire inflation pressure is within the limits recommended by the vehicle manufacturer before conducting either of the following tests.

(1) *Roller-type or drive-on platform tests.* The force applied by the brake on a front wheel or a rear wheel shall not differ by more than 25

percent from the force applied by the brake on the other front wheel or the other rear wheel respectively.

*Inspection procedure.* The vehicle shall be tested on a drive-on platform, or a roller-type brake analyzer with the capability of measuring equalization. The test shall be conducted in accordance with the test equipment manufacturer's specifications. Note the brake force variance.

(2) *Road test.* The service brake system shall stop single unit vehicles, except truck-tractors, in a distance of not more than 35 feet, or combination vehicles and truck-tractors in a distance of not more than 40 feet, from a speed of 20 mph, without leaving a 12-foot-wide lane.

*Inspection procedure.* The road test shall be conducted on a level (not to exceed plus or minus 1 percent grade), dry, smooth, hard-surfaced road that is free from loose material, oil or grease. The service brakes shall be applied at a vehicle speed of 20 mph and the vehicle shall be brought to a stop as specified. Measure the distance required to stop.

*Note.* Inspect for (b), (c) and (d) below on vehicles equipped with brake inspection ports or access openings, and when removal of wheel is not required.

(b) *Disc and drum condition.* If the drum is embossed with a maximum safe diameter dimension or the rotor is embossed with a minimum safe thickness dimension, the drum or disc shall be within the appropriate specifications. These dimensions will generally be found on motor vehicles manufactured since January 1, 1971, and may be found on vehicles manufactured for several years prior to that time. If the drums and discs are not embossed, they shall be within the manufacturer's specifications.

*Inspection procedure.* Examine visually for the condition indicated, measuring as necessary.

(c) *Friction materials.* On each brake, the thickness of the lining or pad shall not be less than one thirty-second of an inch over the fastener, or one-sixteenth of an inch over the brake shoe on bonded linings or pads. Brake linings and pads shall not have cracks or breaks that extend to rivet holes except minor cracks that do not impair attachment. The wire in wire-

backed lining shall not be visible on the friction surface. Drum brake linings shall be securely attached to brake shoes. Disc brake pads shall be securely attached to shoe plates.

*Inspection procedure.* Examine visually for the conditions indicated, and measure the height of the rubbing surface of the lining over the fastener heads. Measure bonded lining thickness over the surface at the thinnest point on the lining or pad.

(d) *Structural and mechanical parts.* Backing plates, brake spiders and caliper assemblies shall not be deformed or cracked. System parts shall not be broken, misaligned, missing, binding, or show evidence of severe wear. Automatic adjusters and other parts shall be assembled and installed correctly.

*Inspection procedure.* Examine visually for conditions indicated.

#### § 570.60 Steering system.

(a) *System play.* Lash or free play in the steering system shall not exceed the values shown in Table 3.

*Inspection procedure.* With the engine on and the steering axle wheels in the straight ahead position, turn the steering wheel in one direction until there is a perceptible movement of the wheel. If a point on the steering wheel rim moves more than the value shown in Table 3 before perceptible return movement of the wheel under observation, there is excessive lash or free play in the steering system.

TABLE 3. Steering Wheel Free Play Value

Steering	
Wheel Diameter (Inches)	Lash (Inches)
16 or less	2
18	2¼
20	2½
22	2¾

(b) *Linkage play.* Free play in the steering linkage shall not exceed the values shown in Table 4.

*Inspection procedure.* Elevate the front end of the vehicle to load the ball joints, if the vehicle is so equipped. Insure that wheel bearings are correctly adjusted. Grasp the front and rear of a tire and attempt to turn the tire and

wheel assemble left to right. If the free movement at the front or rear tread of the tire exceeds the applicable value shown in Table 4, there is excessive steering linkage play.

TABLE 4. Front Wheel Steering Linkage Free Play

Nominal bead diameter or rim size (inches)	Play (inches)
16 or less	$\frac{1}{4}$
16.01 through 18.00	$\frac{3}{8}$
18.01 or more	$\frac{1}{2}$

(c) *Free turning.* Steering wheels shall turn freely through the limit of travel in both directions.

*Inspection procedure.* With the engine running on a vehicle with power steering, or the steerable wheels elevated on a vehicle without power steering, turn the steering wheel through the limit of travel in both directions. Feel for binding or jamming in the steering gear mechanism.

(d) *Alignment.* Toe-in or toe-out condition shall not be greater than 1.5 times the values listed in the vehicle manufacturer's service specification for alignment setting.

*Inspection procedure.* Drive the vehicle over a sideslip indicator or measure with a tread gauge, and verify that the toe-in or toe-out is not greater than 1.5 times the values listed in the vehicle manufacturer's service specification.

(e) *Power steering system.* The power steering system shall not have cracked, frayed or slipping belts, chafed or abraded hoses, show signs of leakage or have insufficient fluid in the reservoir.

*Inspection procedure.* Examine fluid reservoir, hoses and pump belts for the conditions indicated.

NOTE: Inspection of the suspension system must not precede the service brake performance test.

#### § 570.61 Suspension system.

(a) *Suspension condition.* Ball joint seals shall not be cut or cracked, other than superficial surface cracks. Ball joints and kingpins shall not be bent or damaged. Stabilizer bars shall be

connected. Springs shall not be broken and coil springs shall not be extended by spacers. Shock absorber mountings, shackles, and U-bolts shall be securely attached. Rubber bushings shall not be cracked, extruded out from or missing from suspension joints. Radius rods shall not be missing or damaged.

*Inspection procedure.* Examine front and rear end suspension parts for the conditions indicated.

(b) *Shock absorber condition.* There shall be no oil on the shock absorber housings attributable to leakage by the seal.

*Inspection procedure.* Examine shock absorbers for oil leakage from within.

#### § 570.62 Tires.

(a) *Tread depth.* The tread shall be not less than four thirty-seconds of an inch deep on each front tire of any vehicle other than a trailer and not less than two thirty-seconds of an inch on all other tires.

*Inspection procedure.* For tires with treadwear indicators, check for indicators in any two adjacent major grooves at three locations spaced approximately 120° apart around the circumference of the tire. For tires without treadwear indicators, measure the tread depth with a suitable gauge or scale in two adjacent major grooves at 3 locations spaced approximately 120° apart around the circumference of the tire at the area of greatest wear.

(b) *Type.* Vehicles should be equipped with tires on the same axle that are matched in construction and tire size designation, and dual tires shall be matched for overall diameter within one-half inch.

*Inspection procedure.* Examine visually. A mismatch in size and construction between tires on the same axle, or a major deviation from the size recommended by the vehicle or tire manufacturer, is a cause for rejection. On a dual-tire arrangement the diameter of one of the duals must be within one-half inch of the other as measured by a gauge block inserted between the tire and a caliper.

(c) *General condition.* Tires shall be free from chunking, bumps, knots, or bulges evidencing cord, ply or tread separation from the casing.

*Inspection procedure.* Examine visually for the conditions indicated.

(d) *Damage.* Tire cords or belting materials shall not be exposed, either to the naked eye or when cuts on the tire are probed. Reinforcement repairs to the cord body are allowable on tires other than front-mounted tires.

*Inspection procedure.* Examine visually for the conditions indicated, using a blunt instrument if necessary to probe cuts and abrasions.

(e) *Special purpose tires.* Tires marked "Not For Highway Use" or "Farm Use Only" or other such restrictions shall not be used on any motor vehicle operating on public highways.

*Inspection procedure.* Examine visually for tires labeled with specific restrictions.

#### § 570.63 Wheel assemblies.

(a) *Wheel integrity.* A tire rim, wheel disc or spider shall have no visible cracks, elongated bolt holes, or indications of in-service repair by welding.

*Inspection procedure.* Examine visually for the conditions indicated.

(b) *Cast wheels.* Cast wheels shall not be cracked or show evidence of excessive wear in the clamp area.

*Inspection procedure.* Examine visually for the conditions indicated.

(c) *Mounting.* All wheel nuts shall be in place and tight.

*Inspection procedure.* Check wheel retention for the conditions indicated.

39 F.R. 26026  
July 16, 1974

## SECTION II

### ALPHABETICAL LISTING OF FEDERAL MOTOR VEHICLE SAFETY STANDARDS

TITLE	STANDARD NO.
Accelerator Control Systems .....	124
Brake Fluids .....	116
Brake Hoses .....	106-74
Brake Hoses, Hydraulic .....	106
Brakes, Air Systems .....	121
Brakes, Hydraulic .....	105-75
Brakes, Hydraulic Service, Emergency and Parking .....	105
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**PREAMBLE TO PART 571**  
**Initial Federal Motor Vehicle Safety Standards**  
**(Docket No. 3)**

This order establishes Initial Federal Motor Vehicle Safety Standards for new motor vehicles and equipment. A notice of rule making proposing the Initial Standards was issued on November 30, 1966 (31 F.R. 15212, corrected 31 F.R. 15600). All pertinent matter in the written and oral comments received has been fully considered. Considerations of time prevent discussion of comments on individual standards.

The motor vehicle safety standards are rules as that term is defined in 5 U.S.C. sec. 551(4). The established practice is that the public record of a rule-making procedure under 5 U.S.C. section 553 (former sec. 4 Administrative Procedure Act), involving a substantive rule and instituted upon an agency's own initiative, begins with the notice of rule making. An agency is under no legal duty to reveal the internal processes that shaped the project, and interested persons are not entitled to comment thereon, 5 U.S.C. section 553(b)(3). Where, as here, the addresses of a proposed rule are themselves actively engaged as experts on the subject matter, their understanding of the meaning and effect of a rule is certainly not impaired by the absence of such a disclosure. As a practical proposition, this Agency intends to adopt a policy of the greatest possible disclosure of underlying considerations in future substantive rule making when it will not operate under an unusually tight time schedule. In this instance, such disclosure was not possible, and administrative due process required no more than publication of the notice. The requirement that the standards be based on a record does not operate to require insertion in the record of matter not required as part of a rule-making notice.

The following findings are made with respect to all standards—

(1) Each standard is a minimum standard for motor vehicle or equipment performance which is practicable and meets the need for motor vehicle safety, and provides objective criteria;

(2) Each standard is reasonable, practicable, and appropriate for the particular class of motor vehicle or item of equipment for which it is prescribed;

(3) Each standard will contribute substantially to the purpose of reducing traffic accidents, and deaths and injuries to persons resulting therefrom, in the United States; and

(4) The matter incorporated by reference is reasonably available to the persons affected by this regulation.

In addition to the vehicle classes of passengers cars, motorcycles, trucks, buses, and trailers proposed in the Notice, the initial standards as herein established introduce the new class of "multipurpose passenger vehicles." Only standards proposed in the Notice for vehicles now in this class are made applicable to this class. Each standard applies only to the class of vehicles to which it is made applicable by its terms.

The initial standards may be amended from time to time. Each standard remains in effect until rescinded or superseded by a Revised Standard actually becoming effective.

The requirements of Standard No. 209 were originally published on August 31, 1966 (31 F.R. 11528), as a revision to the existing seat belt standard that had been promulgated by the Secretary of Commerce under the authority of Public Law 88-201. At that time, it was provided that the revised standards would become mandatory after February 28, 1967, and would be an optional alternative to the existing standard until that date. As a result seat belt manu-

facturers had already taken steps to meet the March 1, 1967 date before the Notice for the Initial Federal Motor Vehicle Safety Standards was issued on December 3, 1966. To preserve the continuity of this change to the new seat belt standard, the March 1, 1967 effective date was included in the proposed Initial Federal Motor Vehicle Safety Standards. This places no certification requirement on the vehicle manufacturer, however, until the effective date of the first Standard applicable to a motor vehicle rather than motor vehicle equipment.

In consideration of the foregoing, Chapter II of Title 23 [49] of the Code of Federal Regulations is amended by adding a new Subchapter C—Motor Vehicle Safety Regulations, effective January 1, 1968 except Motor Safety Standard No. 209, "Seat Belt Assemblies—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses," which becomes effective March 1, 1967, to read as set forth below.

This regulation was proposed as Part 245 but will, for reasons of organization of subject matter, be issued as Part 371 [255].

This rule-making action is taken under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. sec. 1392, 1407) and the delegations

of authority of October 20, 1966 (31 F.R. 13952) and January 24, 1967 (32 F.R. 1005).

Issued in Washington, D.C., on January 31, 1967.

Lowell K. Bridwell,  
Acting Under Secretary  
of Commerce for Transportation

**(SUBPART A—GENERAL)**

Sec.	
371.1	Scope
371.3	Definitions
371.5	Matter incorporated by reference
371.7	Applicability
371.9	Separability
371.11	Equivalent demonstration procedure
371.13	Labeling of Chassis Cabs

**SUBPART B—STANDARDS**

**371.21 Federal Motor Vehicle Safety Standards.**

'AUTHORITY: The provisions of this part 371 issued under secs. 103, 119, 80 Stat. 719, 728; 15 U.S.C. 1392, 1407.

**32 F.R. 2408**  
**February 3, 1967**

**PREAMBLE TO AMENDMENTS TO SUBPART A § 571.3b AND § 571.7b**  
**Federal Motor Vehicle Safety Standards Chassis-Cab**  
**(Docket No. 21)**

A proposal to amend Part 371, Initial Federal Motor Vehicle Safety Standards, by adding a definition of "incomplete motor vehicles" and specifying labeling requirements was published in the *Federal Register* on December 2, 1967 (32 F.R. 6534), inviting interested persons to comment.

The proposed amendment has been modified to take into account the numerous written and oral comments received. Under the proposed amendment an incomplete vehicle was considered a separable type of motor vehicle. Some of the comments noted that it was unrealistic to consider a bare chassis a motor vehicle since it was no more a motor vehicle and capable of being used on the public highways than many other parts which are incorporated into a completed vehicle. Comments also indicated that the overwhelming majority of what was called incomplete motor vehicles are in the form of a chassis with a cab attached. As such, chassis-cabs have the capability of conforming to the standards but the manufacturer of the chassis-cab cannot always tell what every end use will be.

Comments from body manufacturers and truck dealers indicated they did not have the expertise or the physical apparatus to independently test for all standards previously met by the manufacturer of the incomplete motor vehicle nor did they think they should have to certify that these standards have been met. The consensus of the comments indicated that a manufacturer or dealer should only be responsible for that which he manufactures or affects in assembling the completed vehicle.

On the basis of the comments it appears inappropriate to require persons who merely add to a chassis-cab a body or work-performing or load-carrying structure to certify and to accept

legal responsibility for the chassis-cab's conformance with all motor vehicle safety standards. Additionally, it appears inappropriate to consider bare chassis and similar assemblages motor vehicles until they reach the chassis-cab stage at which they are capable of meeting standards applicable to their principal end use. Accordingly, the regulation defines a chassis-cab as a vehicle and imposes the obligation of conforming to all standards applicable to its principal end use upon the manufacturer of the chassis-cab with a limited exception for the lighting standard.

Chassis-cabs, manufactured on or after January 1, 1968, are required to meet all motor vehicle safety standards applicable to the principal end use intended by its manufacturer, except that where the chassis-cab is equipped with only part and not all of the items of lighting equipment referred to in Standard 108, it need not meet such standard. The chassis-cab is required to meet Standard No. 108 whenever all of the items of lighting equipment referred to in Standard 108 are installed on the chassis-cab. Frequently the manufacturer of the chassis-cab will install only a part of the lighting equipment because he either will not know what end use will be made of the vehicle or because the body or other structure to be added to the chassis-cab will be required to bear the balance of the lighting equipment referred to in Standard No. 108.

In order to provide a means of identifying the chassis-cab, its date of production, the Federal motor vehicle safety standards to which it conforms, and to insure that the person combining the chassis-cab with a body or other structure has adequate information with which to meet his statutory responsibilities, the regulation requires that chassis-cabs manufactured on or after

January 1, 1968, have a label affixed which supplies this information.

Concurrent with the issuance of this amendment the Federal Highway Administration has issued an interpretation (1) describing the responsibility under the National Traffic and Motor Vehicle Safety Act of 1966 of persons who combine bodies or other structures with chassis-cabs and sell the same. In brief, the interpretation requires that persons combining such a chassis-cab with a body or other like structure will be responsible for compliance with the lighting standard and for certification of such compliance under section 114 where such person sells the combined assemblage to another dealer. Additionally, under section 108(a)(1) the person combining the chassis-cab with a body or other like structure will be responsible for assuring that the completed assemblage complies with all applicable standards in effect on the date of manufacture of the chassis-cab, compliance with which has not been previously certified by the manufacturer of the chassis-cab and for assuring that compliance with standards previously met by the chassis-cab have not been adversely affected by reason of the addition of the body or like structure.

The interpretive ruling, however, does not require a truck, bus, or multipurpose vehicle consisting of a chassis-cab manufactured prior to

January 1, 1968, and a body or like structure manufactured at any time, to meet any standard. For further details interested persons are referred to the text of the ruling.

It is recognized that the problems associated with the multistage manufacture of trucks, buses, and multipurpose passenger vehicles are various and complex. . . . Requests for interpretations or modifications will be given appropriate consideration.

Because the Motor Vehicle Safety Standards issued pursuant to the National Traffic and Motor Vehicle Safety Act of 1966 become effective January 1, 1968, it is found for good cause that this regulation becomes effective upon issuance.

(1) F.R. Doc. 67-15175, in Notices Section, *infra*.

(Secs. 103, 119, National Traffic and Motor Vehicle Safety Act of 1966; 15 U.S.C. 1392, 1407; delegation of authority of Mar. 31, 1967 (32 F.R. 5606), Apr. 6, 1967 (32 F.R. 6495), July 27, 1967 (32 F.R. 11276), and Oct. 13, 1967 (32 F.R. 14277)).

Issued in Washington, D.C., on December 29, 1967.

Lowell K. Bridwell,  
Federal Highway Administrator

33 F.R. 18  
January 3, 1968

## PREAMBLE TO AMENDMENT TO PART 571

### Subpart A—General “Mobile Structure Trailer”

A mobile home for purposes of the Federal motor vehicle safety standards is considered a “trailer” which is defined in 49 CFR 571.3(b) as a “motor vehicle with or without motive power, designed for carrying persons or property and for being drawn by another motor vehicle.” On August 15, 1968, a notice of request for comments was published (33 F.R. 11604) announcing that rulemaking was being considered “which would either exclude mobile homes, offices, classrooms, etc. from applicability of the Federal Motor Vehicle Safety Standards \* \* \* or classify them as a separate category of vehicle subject to regulation.” Comments were requested pertinent to these issues and Docket No. 26 was established to receive them.

The Federal Highway Administrator has evaluated these comments and is of the opinion that a mobile home towed on its own wheels is a “motor vehicle” within the meaning of section 102(3) of the National Traffic and Motor Vehicle Safety Act of 1966 (hereafter the Act), and is properly categorized as a trailer. However, differences between mobile homes and cargo and travel trailers are believed significant enough to warrant the creation of a subcategory of trailer covering mobile homes only. This new subcategory is designated “mobile structure trailer.”

The mobile home industry has asserted that its products are not “motor vehicles” in view of the infrequent use of the average mobile home upon the public streets, roads, and highways. Comments to Docket No. 26 state that the average mobile home is moved once every 40 months, that it spends less than 12 hours on the public roads in 18 to 20 years, and that it only spends 0.055

percent of its useful life on the highway. Thus, it is contended that mobile homes are not “manufactured primarily for use on the public streets, roads, and highways” and hence are not “motor vehicles” for purposes of the Act.

The undisputed fact is that mobile homes as their name implies, are constructed with a view towards over-the-road operations; their capability for travel on public highways is their principal advantage over fixed-site structures. Further, no one denies that mobile homes can present a significant safety hazard when they perform that function.

The Administrator views his conclusion that a mobile home towed on its own wheels is a motor vehicle as being consistent with the criteria expressed in the opinion on mini-bikes published October 3, 1969 (34 F.R. 15416). It is noteworthy that many States in significant ways accord mobile homes the same treatment as conventional motor vehicles. Registration, licensing, or other permission for use on the public roads is generally required. A number of jurisdictions have standards for mobile home lighting, braking, hitching, tire loading, and axle number and location.

Not only is a mobile home towed on its own wheels operationally capable of being used on public thoroughfares, it is almost exclusively so used in traveling from plant to dealer to owner site. Even assuming an infrequent move for the average mobile home, mobile homes as a class are found with increasing frequency on the public roads; industry production in 1967 was 240,000 units and the estimate for 1969 production was 400,000 units. The demand for low-cost housing makes the industry optimistic that there will be similar increases in years to come.

Clearly, when on the public highways, a mobile home towed on its own wheels will present a hazard if its tires, brakes, connection to the towing vehicle, and other factors affecting road-worthiness and traffic safety do not meet minimum standards. While some States, in recognition of this problem, have adopted their own safety standards, the Administrator believes that the decision published today may result in eventual uniformity of safety standards for mobile homes, and for that reason should be welcomed both by the motoring public and by the industry.

The current definition of trailer in § 571.3(b) is sufficient to encompass mobile homes. Yet, because of its size (10 to 14 feet in overall width), construction (a walled and roofed structure), and purpose (general off-road dwelling or commercial use) a mobile home is different from a conventional cargo or travel trailer. Separation by subclassification will allow exclusion of mobile homes from future rulemaking actions relating to trailers which may be inappropriate for mobile homes.

The sole standard presently applicable to trailers (No. 108-Lamps, Reflective Devices, and Associated Equipment) continues to be considered appropriate for mobile homes. In rec-

ognition of the limited road use of mobile homes, manufacturers have been advised for some time that compliance may be achieved by use of a lighting harness removable upon completion of transit.

The Administrator believes that mobile homes, offices, classrooms, etc. or modular portions thereof, should be termed mobile structures. In consideration of the foregoing, 49 CFR 571.3(b) is hereby amended effective immediately to add the following:

“Mobile structure trailer” means a trailer that has a roof and walls, is at least 10 feet wide, and can be used offroad for dwelling or commercial purposes.

Since this amendment merely establishes a subcategory of trailer without imposing any additional burden on any person I find that notice and public procedure are unnecessary and that good cause exists for making it effective on less than 30 days notice.

Issued on March 20, 1970.

F. C. Turner,  
Federal Highway Administrator.

**35 F.R. 5333**  
**March 31, 1970**

**PREAMBLE TO AMENDMENT TO PART 571****Subpart A—General**  
**“Fixed Collision Barrier”**  
**(Docket No. 69-26)**

On December 24, 1969, a proposal to amend § 571.3, *Definitions*, of Title 49, Code of Federal Regulations, by adding a definition for “Fixed collision barrier” was published in the *Federal Register* (34 F.R. 20212). The proposed definition was intended to replace present references in the motor vehicle safety standards to SAE Recommended Practice J850, “Barrier Collision Tests,” and to be used in future standards containing performance requirements tested by impacting a vehicle into a stationary barrier.

The intent of the definition is to establish a firm basis upon which performance characteristics of a vehicle may be measured and the requirements of the standards enforced. Such a definition allows manufacturers to have flexibility in constructing barriers and testing their vehicles, since the focus is on the vehicle requirements rather than on the test equipment.

The core of the definition is that the barrier absorbs “no significant portion of the vehicle’s kinetic energy”. It should be remembered that this is not intended to be a description of an actual test barrier. It is a device used in various standards to establish required quantitative performance levels of a vehicle in a crash situation, and means simply that the vehicle must meet the requirement no matter how small an amount of energy is absorbed by the barrier.

So viewed, the comment that the use of the word “significant” injects an element of subjectivity into the definition is without merit. The question whether an amount of energy absorbed by a barrier is significant is to be answered by comparing it with the extent to which the vehicle exceeds the performance requirement. A vehicle that exceeds the require-

ments by 50 percent, for example, when impacted into a barrier that absorbs less than 1 percent of its kinetic energy, will probably meet the requirements in any case. Obversely, if a vehicle exceeds the requirements by an amount on the order of only 1 percent when tested, energy absorption of the same order will cast doubt on the validity of the test or the conformity of the vehicle. Thus, it would be inconsistent with the purposes of the definition to follow the suggestion that was made of allowing a specified percentage of energy absorption such as 1 percent. Furthermore, it would be necessary for the Bureau to test vehicles against a barrier that absorbed at least 1 percent of the energy in each case, in order to conclusively establish nonconformity. Since the precise amounts of energy absorbed in an impact are virtually impossible to establish, this would be a serious hindrance to enforcement of the standards.

It was suggested that the definition allow a plywood facing material to be used on a barrier. It is not necessary, however, to make such a specification, since no construction method whatever is prescribed, and manufacturers may use such facings or other materials as they see fit. Their responsibility is simply to insure that their vehicles will meet the performance requirements when they are impacted into a barrier whose energy absorption approaches zero.

One comment requested that the first paragraph be changed to make it clear that the dimensions of the barrier need not be such as to prevent the passage of parts of the vehicle that become separated during impact. Presumably the passage of separated parts mentioned by the commenter would not affect the measured per-

formance (steering wheel displacement, windshield retention, etc.). If it would not affect the performance, then the vehicle would perform in the same way when it impacted an "infinitely large" barrier, and such a provision would be unnecessary. If it would affect performance, then the provision would be inappropriate, since the point of the definition is to eliminate ambiguity by requiring the vehicle to meet the requirements upon impact with a barrier large enough to intercept the entire vehicle. The suggestion has therefore not been adopted.

A comment questioned the phrase "level vehicle attitude" in the second paragraph of the proposal. The intent of this paragraph was not to impose requirements as to vehicle attitude on a horizontal surface, but to specify a horizontal

approach surface large enough to allow complete damping of transient transverse or vertical vehicle motion. The paragraph has accordingly been reworded to specify that the approach surface be large enough for the vehicle to "attain a stable attitude" during the approach.

The third paragraph has been editorially reworded for clarification without change in its substance or intent.

Issued on July 8, 1970.

Douglas W. Toms,  
Director,  
National Highway Safety Bureau.

**35 F.R. 11242**  
**July 14, 1970**

## PREAMBLE TO AMENDMENT TO PART 571

### Subpart A—General

#### “Definitions”

The purpose of this notice is to amend Subpart A, General, of Part 571, Federal Motor Vehicle Safety Standards, in Title 49, Code of Federal Regulations, by adding certain definitions and an explanatory section with respect to drafting usage in the standards and regulations issued under the National Traffic and Motor Vehicle Safety Act.

1. A problem that arises frequently in the drafting and interpretation of standards is expression of the concept that a vehicle or item of equipment must meet specified requirements within a range of values, or in connection with all the items in a set, not simultaneously, but at whatever point within the range or with whatever item in the set the Administration selects for testing. Normal English usage describes this concept by use of the word “any,” as in the following examples: “The vehicle must meet the requirements of S4.1 when tested at any point between 18 and 22 inches above the ground.” “Each tire shall be capable of meeting the requirements of this standard when mounted on any rim specified by the manufacturer as suitable for use with that tire.”

The interpretive difficulty arises because, although the requirements of the standards are drafted as descriptions of the limits within which the Administration will test the vehicles and equipment to which the standards apply, some members of the public fail to recognize this, and tend to view the standards (erroneously) as descriptions of the tests that manufacturers must perform. Thus, in the above ex-

amples, persons may mistakenly consider the requirement as requiring only that the vehicle must meet the requirements at some one point between 18 and 22 inches from the ground, or that a tire need only meet the requirements when mounted on a particular one of the rims recommended by the manufacturer. To correct any such misconceptions, and to simplify the drafting and interpretation of standards and regulations, an explanatory section is hereby added to the “General” subpart of Part 571.

2. To simplify the drafting and organization of standards and regulations, definitions are hereby added to the list in 49 CFR 571.3 for the terms “longitudinal” or “longitudinally,” gross vehicle weight rating” or “GVWR,” “gross axle weight rating” or “GAWR,” “gross combination weight rating” or “GCWR,” and “unloaded vehicle weight.”

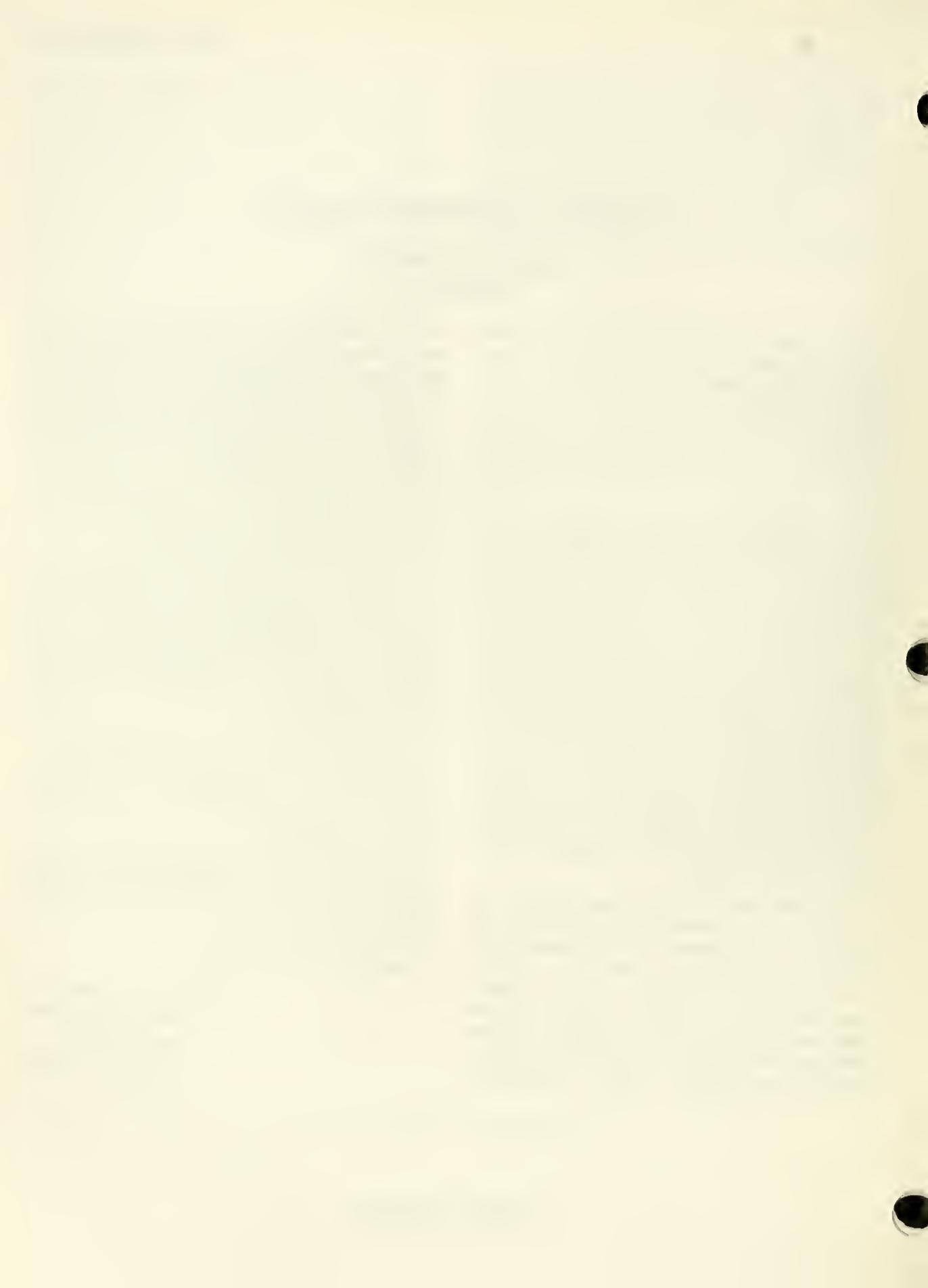
Since these amendments are clarifying and interpretative in nature, notice and public procedure thereon are unnecessary, and they are effective upon publication in the *Federal Register* (2-5-71).

In consideration of the foregoing, Subpart A, General, of Part 571, Federal Motor Vehicle Safety Standards, in Title 49, Code of Federal Regulations, is amended. . . .

Issued on February 2, 1971.

Douglas W. Toms,  
Acting Administrator.

36 F.R. 2511  
February 5, 1971



**PREAMBLE TO AMENDMENT TO PART 571—FEDERAL MOTOR VEHICLE  
SAFETY STANDARDS  
(Docket No. 71-8; Notice 2)**

The purpose of this notice is to amend section 571.3(b) to add a definition of "firefighting vehicle," and to add new section 571.8 to provide for delayed effective dates of future standards to which firefighting vehicles must conform.

The notice of proposed amendment upon which this amendment is based was published in the *Federal Register* on April 16, 1971, (36 F.R. 7259). This amendment is responsive to the potential problems of manufacturers of firefighting vehicles that may be caused if Federal motor vehicle safety standards are issued after purchase contracts are signed, to be effective before the manufacture of the vehicles in question is completed. As noted in the prior notice, many of these vehicles are custom-built to the buyer's specifications and require up to 18 months or more to complete after the contract is signed, and the buyer, typically a unit of municipal government, is often not in a position to renegotiate the contract and appropriate additional funds. The amendment specifies that the effective date for any standard or amendment of a standard to which a firefighting vehicle must conform shall

be 2 years after the date that notice of such standard or amendment is published in the *Federal Register*, or the effective date specified in the notice, whichever is later, unless such standard or amendment otherwise specifically provides with respect to firefighting vehicles. This will assure manufacturers and buyers that the vehicles for which contracts are signed need only conform to standards on which the final rules have been issued at the time the contract is signed, as long as the vehicles are completed within 2 years of the signing date.

No objections to the proposal were received.

In consideration of the foregoing, 49 CFR 571 is amended . . . .

Effective date: September 1, 1971.

Issued on July 21, 1971.

Douglas W. Toms  
Acting Administrator

**36 F.R. 13926  
July 28, 1971**



**PREAMBLE TO AMENDMENT TO PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS**

This notice amends the definition of "Gross axle weight rating" to reflect more clearly the intended meaning of the phrase.

Gross axle weight rating is defined in 49 CFR 571.3 as follows:

"Gross axle weight rating" or "GAWR: means the value specified by the vehicle manufacturer as the loaded weight on a single axle measured at the tire-ground interfaces.

GAWR, as it has been interpreted by this agency in response to questions from interested persons, is intended to reflect the load carrying capacity of the axle system, and not necessarily the actual load that they may be imposed on an axle system by a vehicle in use. The capacity should normally be at least equal to the imposed load, of course, but it may exceed the imposed load to any extent desired by the vehicle manufacturer.

In order to express this intent more clearly, the definition of "Gross axle weight rating" in 49 CFR § 571.3, Definitions, is hereby amended.

*Effective date:* February 12, 1972.

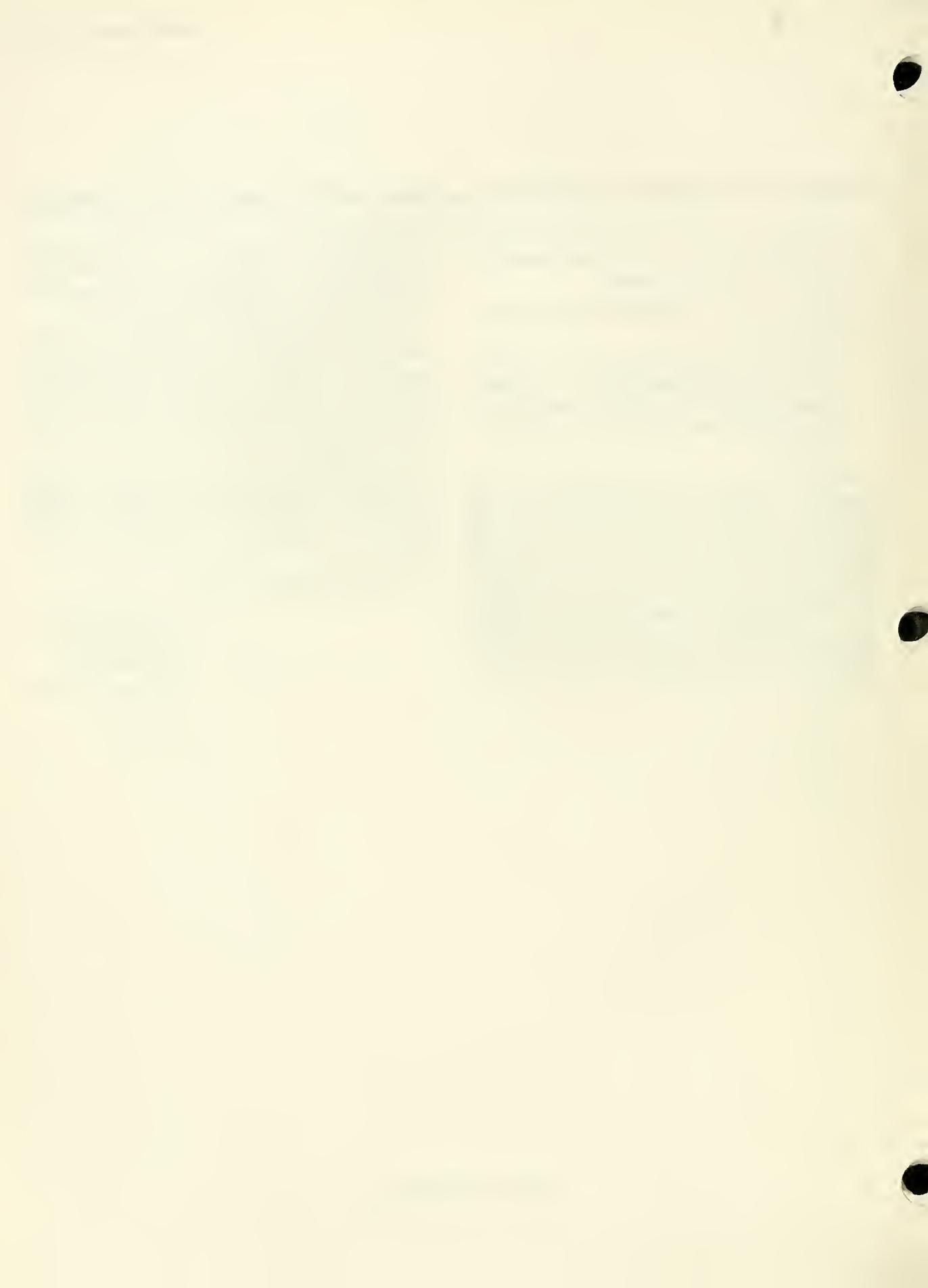
Since this amendment is interpretative in nature, and reflects current understanding and practice, it is found for good cause that notice and public procedure thereon are unnecessary, and that an immediate effective date is in the public interest.

This amendment is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407, and the delegation of authority at 49 CFR 1.51.

Issued on February 8, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 3185**  
**February 12, 1972**



## PREAMBLE TO AMENDMENT TO PART 571

### Subpart A—General

#### “Definitions”

This notice extends the applicability of the definitions used in the Federal Motor Vehicle Safety Standards to other regulations contained in Chapter V of Title 49, Code of Federal Regulations, and deletes the definitions of “Gross axle weight rating” and “Gross vehicle weight rating” from the regulations governing vehicles manufactured in two or more stages.

49 CFR 571.3(b) contains the definitions used in the Federal Motor Vehicle Safety Standards. Some of the regulations other than standards contain their own definition sections defining terms unique to the regulation, and otherwise incorporating by reference the definitions of Part 571. An example of this is the definition section in the Certification Regulation, 49 CFR 567.3: “All terms that are defined in the Act and the rules and standards issued under its authority are used as defined therein.” However, there is no reverse applicability of 49 CFR 571.3(b), which applies only to terms “as used in this part.” One result has been that duplicate definitions appear in certain regulations, specifically, the identical definitions of “Gross axle weight rating” and “Gross vehicle weight rating” found in both Part 571 and the regulation on Vehicles Manufactured in Two or More Stages, Part 568. To prevent unnecessary duplication and the possibility of

confusion in the future, the Administration has determined that the definitions used in Part 571 should apply to all regulations in Chapter V, and also that Part 568 should be amended by deleting the definitions of “Gross axle weight rating” and “Gross vehicle weight rating.” In consideration of the foregoing 49 CFR 571.3(b) is amended . . .

*Effective date:* June 1, 1972. Since this amendment is administrative and interpretive in nature and imposes no additional burden upon any person, notice and public procedure thereon is unnecessary and it may be made effective in less than 30 days after publication in the *Federal Register*.

This notice is issued under the authority of section 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407), and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administration 49 CFR 1.51.

Issued on May 9, 1972.

Douglas W. Toms  
Administrator

37 F.R. 10938  
June 1, 1972



**PREAMBLE TO AMENDMENT TO PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS****Subpart A—General**

This notice deletes the definition of "Occupant" from the general definitions applicable to the Federal motor vehicle standards.

At present, "Occupant" is defined in § 571.3 Definitions, (applicable to all standards) as "a person or manikin seated in the vehicle, and, unless otherwise specified in an individual standard, having the dimensions and weight of the 95th percentile adult male." However, where the word "occupant" is used in this chapter, the weight has generally been specified if it is a necessary part of the requirement. Thus, the definition is superfluous. Moreover, in instances where the use of a weight other than that of a 95th percentile male is assumed, the definition could be misleading.

Since this amendment is clarifying and interpretative in nature, and does not affect any requirements, notice and public procedure thereon are found to be unnecessary.

Accordingly, 49 CFR § 571.3(b) is hereby amended by deleting the definition of "occupant".

Effective date: April 1, 1973.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on February 23, 1973.

Douglas W. Toms  
Administrator

**38 F.R. 5636**  
**March 2, 1973**



## PREAMBLE TO AMENDMENT TO PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS

### Subpart A—General

This notice amends the Federal Motor Vehicle Safety Standards, 49 CFR Part 571, by removing the general provision excepting motor vehicles of 1,000 pounds or less curb weight other than trailers and motorcycles (hereafter referred to as "lightweight vehicles") from the applicability of the safety standards.

The NHTSA published a notice of proposed rule making on August 16, 1972 (37 F.R. 16553) proposing that the motor vehicle safety standards apply to all vehicles regardless of weight. Comments generally favored the proposal. Those who opposed the proposal expressed concern that standards compliance would hinder development of small urban vehicles. It was recommended that different performance requirements be adopted for lightweight passenger cars in some areas of the standards, such as those related to structural crashworthiness. One commenter requested that exemption not be discontinued, but be made available for vehicles with a curb weight of up to 1500 pounds.

The NHTSA has determined that the general exception of lightweight vehicles from conformity with the standards can no longer be justified, and is hereby amending 49 CFR § 571.7(a) to remove it. In so doing, it is mindful of the potential effect of this action upon the development of small, economical vehicles. As it observed in the notice:

"It remains true that vehicles in this weight class have inherent disadvantages in meeting standards requiring, for example, structural strength or considerable crush distance. Many other important standards, on the other hand, such as those on lighting, braking, and glazing, should be attainable by lightweight vehicles virtually as easily as by heavier ones. It thus

appears in the public interest to consider the needs and problems of lightweight vehicles on a standard-by-standard basis (as is presently done in the case of heavy vehicles, which receive differential treatment in several standards), rather than by an across-the-board exception."

A manufacturer has the option of petitioning for amendment of any standard it feels is impracticable or inappropriate for lightweight vehicles. Alternatively, it may be eligible to petition for temporary exemption from one or more standards upon one of the bases provided in Section 123 of the National Traffic and Motor Vehicle Safety Act (Pub. L. 92-548).

An additional comment concerned the inequity in treatment between three- and four-wheeled vehicles, the former categorized as "motorcycles" for purposes of the standards and required to comply with fewer standards. By a separate notice published today (38 F.R. 12818) the NHTSA is seeking to correct this inequity by proposing a redefinition of "motorcycle" which would exclude most three-wheeled vehicles.

In consideration of the foregoing, 49 CFR 571.7(a) is revised. . . .

*Effective date:* January 1, 1974.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 38 F.R. 12147).

Issued on May 10, 1973.

James E. Wilson  
Associate Administrator  
Traffic Safety Programs

**38 F.R. 12808**  
**May 16, 1973**



**PREAMBLE TO AMENDMENT TO PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS****Subpart A—General****(Docket No. 73-12; Notice 2)**

This notice amends 49 CFR 571.3(b), Definitions, of the Federal motor vehicle safety standards, by revising the definition of "motorcycle".

The NHTSA proposed in the *Federal Register* on May 16, 1973 (38 F.R. 12818) that a "motorcycle" be defined as a "two-wheeled motor vehicle with motive power, or a three-wheeled motor vehicle with motive power and without a full or partial passenger enclosure".

Interested persons have been afforded an opportunity to participate in the making of this amendment and due consideration has been given to all comments received in response to the notice, insofar as they relate to matters within its scope.

The issue raised most frequently in the comments was the concern that the addition of a sidecar to a two-wheeled motorcycle would create a combination vehicle not classifiable as a "motorcycle". The NHTSA considers a sidecar to be an item of motor vehicle equipment which, when added to a two-wheeled vehicle, does not change that vehicle's original classification as a "motorcycle".

As the agency had anticipated, comments were submitted by manufacturers and potential manufacturers of three-wheeled vehicles that would be excluded from categorization as "motorcycles". These commenters generally objected to the imposition of passenger car and truck standards on their vehicles, on the grounds that these are inappropriate for low-speed lightweight vehicles. One manufacturer argued that it could not meet seating and restraint requirements. Others suggested that a special category be established for three-wheelers. To one commenter, the options of petitioning for amendment of "inappropriate" standards, or for temporary

exemption from "appropriate" ones pending compliance did not appear to offer an adequate solution, arguing that it represented "a lengthy procedure with doubtful outcome".

Only one petition has been received for amendment of standards applicable to lightweight or three-wheeled vehicles, and pending its resolution no separate categories or special requirements for these vehicles have been established. Under the certification scheme imposed by the National Traffic and Motor Vehicle Safety Act, a manufacturer has the responsibility of determining whether his vehicle meets the Federal standards, and petitioning if an appropriate change appears necessary. The NHTSA believes that the goals of motor vehicle safety in this area are more likely to be realized by consideration of problems with the standards as they are raised by individual manufacturers, than by attempting to establish a comprehensive regulatory scheme for lightweight vehicles on the basis of the scanty data presently available.

The definition that NHTSA proposed was opposed on substantive grounds as well. Several commenters said the phrase "partial passenger enclosure" was ambiguous and would create problems of interpretation. It was suggested that reference be made to such characteristics of two-wheeled motorcycles as saddle seating and handlebars. The agency has decided that these comments have merit, and that a definition of "motorcycle" should emphasize features of three-wheeled vehicles to be included in the definition, rather than those to be excluded. Accordingly the definition is being adopted that three-wheeled motorcycles are those "utilizing a handlebar for steering and having a seat that is straddled by the driver".

Effective: September 1, 1974

The NHTSA considers the adoption of this amendment dispositive of recent petitions of the Motorcycle Industry Council and Cushman Motors for a redefinition of "motorcycle", and to the extent that those requests differ from the definition adopted today the petitions are denied.

In consideration of the foregoing the definition of "Motorcycle" in 49 CFR 571.3(b) is revised . . . .

*Effective date:* September 1, 1974.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51)

Issued on November 19, 1973.

James B. Gregory  
Administrator

**38 F.R. 32580**  
**November 27, 1973**

**PREAMBLE TO AMENDMENT TO PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS****Subpart A—General****(Docket No. 73-12; Notice 3)**

This notice responds to petitions for reconsideration of the recent redefinition of "motorcycle" (38 F.R. 32580), and amends 49 CFR 571.3(b), Definitions, by revoking that redefinition. In a notice issued today, the NHTSA has proposed an amendment to 49 CFR 571.3(b) that would redefine the vehicle category "motorcycle."

In a notice published on May 16, 1973, (38 F.R. 12818) the NHTSA proposed that a "motorcycle" be defined as "a two-wheeled motor vehicle with motive power, or a three-wheeled motor vehicle with motive power and without a full or partial passenger enclosure." On the basis of comments received, on November 27, 1973, (38 F.R. 32580) 49 CFR 571.3(b) was amended, effective September 1, 1974, to define "motorcycle" as a "two-wheeled motor vehicle with motive power, a handlebar for steering, and a seat that is straddled by the driver." This definition is being revoked in light of the agency's decision to propose a new definition, leaving the original definition in force pending further rulemaking action.

Petitions for reconsideration were submitted by White Motor Corporation, EVI, Inc., Otis Elevator, and Cushman Motors, all of whom objected to the revised definition. Cushman Motors, Otis Elevator, and EVI, Inc. argued that the revised definition was inappropriate in that no safety need had been demonstrated to warrant its adoption. The NHTSA does not agree with this contention. Safety demands that the existing standards apply to vehicle types which have similar characteristics and end uses. For instance, vehicles that are used as passenger cars and whose configurations display basic passenger car characteristics should, in the interest of safety, be subject to passenger car standards.

Cushman Motors and Otis Elevator asserted that the effect of the revised definition, subjecting their three-wheeled vehicles to passenger car or truck standards, would be to force their vehicles out of production since it would be impossible for them to comply with the applicable safety standards. This issue was discussed in a notice published May 16, 1973, (38 F.R. 12808) removing the provision excepting motor vehicles of 1,000 pounds or less curb weight from the applicability of the safety standards. The NHTSA explained in that notice:

A manufacturer has the option of petitioning for amendment of any standard it feels is impracticable or inappropriate for lightweight vehicles. Alternatively, it may be eligible to petition for temporary exemption from one or more standards upon one of the bases provided in section 123 of the National Traffic and Motor Vehicle Safety Act (Public Law 92-548).

Petitioners' most substantial objection was that the definition excluded certain vehicles whose overall configurations are closer to those of motorcycles than of passenger cars or trucks, while including others for which regulation as motorcycles appears inappropriate. Petitioners argued that the presence of a steering wheel and a bench seat would subject a lightweight, unenclosed three-wheeled vehicle to passenger car or truck requirements, regardless of other characteristics which might render it more suited to regulation as a motorcycle. They contended that the definition also had the effect of allowing fully enclosed vehicles, if equipped with handlebars and a straddle seat, to meet only the requirements applicable to motorcycles regardless of their overall similarity to a passenger car or truck.

The NHTSA has concluded that some of these arguments have merit. Three-wheeled vehicles, though low in volume of production, span a variety of types that range from vehicles virtually identical to motorcycles forward of their rear axles to those that have every characteristic of small passenger cars except for the number of wheels on the ground. The most reasonable and appropriate dividing line appears to be one based on a vehicle feature crucial to the application of conventional passenger car or truck standards—an enclosed passenger compartment. The petition from White Motor Corporation suggested a definition that would divide motorcycles from other vehicle types on the basis of a passenger enclosure above the level of the handlebars. The NHTSA has concluded that the suggestion is meritorious, and it forms the basis for the proposed redefinition published today.

Several commenters objected to the amendment on grounds that it differed from the proposal (38 F.R. 12818). In light of the fact that the

redefinition is being revoked on the merits and a new definition is proposed, the NHTSA considers that issue moot.

In light of the foregoing, the definition of "motorcycle" in 49 CFR 571.3(b), *Definitions*, published November 27, 1973, (38 F.R. 32580), to be effective September 1, 1974, is hereby deleted.

Effective date: April 30, 1974. Since this action revokes an amendment that was not yet effective, it is found for good cause shown that an immediate effective date is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on April 24, 1974.

James B. Gregory  
Administrator

**39 F.R. 15039**  
**April 30, 1974**

## PREAMBLE TO AMENDMENT TO PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS

### Subpart A—General

(Docket No. 74-27; Notice 1)

The purpose of this notice is to amend 49 CFR Part 571 by deleting § 571.11, Equivalent Demonstration Procedure, which refers to the substitution of test procedures by manufacturers for those prescribed in the safety standards.

Section 571.11, which was a part of the original procedural rules, provides that an "approved equivalent" demonstration procedure may be substituted for the testing procedure specified in a particular standard. The implication of this provision is that the manufacturer must obtain from the NHTSA approval of any testing procedures he intends to utilize that deviate from the procedures prescribed in the standards. This agency's interpretations of the National Traffic and Motor Vehicle Safety Act since the promulgation of § 571.11, however, are at variance with the requirement implied by that section.

The safety standards establish required performance levels for motor vehicles and motor vehicle equipment. The test procedures in the safety standards are simply objective ways of phrasing the performance requirements. Generally, they represent the procedures that will be followed by the agency in its compliance testing. The manufacturer is not legally obligated to follow these test procedures when determining

the compliance of his products for the purposes of certification. The legal requirement is that he exercise due care in assuring himself that his product is capable of meeting the performance requirements of applicable standards when tested in the manner prescribed. He may do this by whatever means he determines to be reliable and necessary.

Accordingly, 49 CFR Part 571 is amended by deleting § 571.11, Equivalent Demonstration Procedure.

Effective date: August 7, 1974. This amendment is clarifying and interpretative in nature, and it is therefore found for good cause shown that notice and public procedure are unnecessary, and that an immediate effective date is in the public interest.

(Sec. 103, 119 Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on August 2, 1974.

James B. Gregory  
Administrator

**39 F.R. 28437**  
**August 7, 1974**



## PREAMBLE TO AMENDMENT TO PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS

(Docket No. 75-9; Notice 2)

This notice amends 49 CFR 571.7, *Applicability*, by the addition of a new paragraph to specify the conditions under which a truck assembled by combining major new components with some used components will be considered used for the purpose of the motor vehicle safety standards, associated regulations, and the National Traffic and Motor Vehicle Safety Act.

The NHTSA proposed a modification of its existing interpretation of what constitutes the manufacture of a new motor vehicle when used components from an existing vehicle are involved (40 F.R. 19485, May 5, 1975). Up to this time, the NHTSA has considered that the addition of new components (such as a truck body) to the chassis of a used vehicle does not constitute the manufacture of a new vehicle, but that the addition of used components to a new chassis which has never been certified in a vehicle constitutes the manufacture of a new vehicle, subject to the safety standards in effect for that vehicle class on the date of manufacture. This criterion has been relied on in the area of chassis-cab multi-stage manufacture.

Two truck manufacturers, the American Trucking Associations and the National Automobile Dealers Association, requested reconsideration of this criterion, because the high value of some components of a chassis makes their reuse feasible although the entire chassis may not be reusable. They stressed the savings to an owner in combining a "glider kit" (typically a cab, frame rails, and front suspension) and the used power train of a wrecked or badly worn vehicle instead of purchasing a complete new vehicle from a truck manufacturer. Standard No. 121, *Air Brake Systems*, has heightened the importance of the question of what constitutes a new vehicle, since

bringing vehicles with pre-121 axles into conformity with the standard appears to be economically impracticable.

The NHTSA proposed a statement of what constitutes manufacture of a vehicle in these cases which agreed with the suggestions of the two petitioning manufacturers, International Harvester and White Motor Corporation. The agency considered it important that the retention of a minimum number of valuable used components be required as a justification in each case, and that retention of the identity of the used vehicle, with respect to model year and identification number, be required as evidence that the reassembly is a bona fide salvage operation, to avoid creating any undue economic incentives for evasion of Standard No. 121.

Manufacturers and users supported the clarification that permits the continued use of glider kits in combination with pre-121 rear axles, but International Harvester, Maek, PACCAR, Transpac, and the State of California objected to the second criterion that vehicles be identified as the old vehicle. The comments indicate that requiring the identity of the old vehicle to continue in the rebuilt vehicle would have real and unintended disadvantages in the area of vehicle registration by the States. As proposed by the NHTSA, the registration would reflect a vehicle identification number that would not appear on the new vehicle frame or in the new vehicle cab, with resulting difficulty in verifying the true identity of the vehicle. The external identification on the cab would, in many cases, also disagree with the vehicle identification documents. The NHTSA agrees that State registration practices to avoid this confusion should be supported

as long as the practice does not encourage the salvage of old vehicle components in order to avoid safety standards. Therefore, the NHTSA issues the provision in a form which includes only the requirement for at least two used drive train components.

Rockwell International cautioned the NHTSA against a decision that would encourage the re-use of unsafe components on the highway. The NHTSA always considers the possibility its regulations might encourage continued use of vehicles on the highway after they would normally be replaced. As in other cases, the NHTSA will monitor the effect of its decision on glider kits to ensure that their use without requiring compliance with all applicable standards does not result in a pattern of conscious avoidance of Standard No. 121 or other standards. In the event the agency should discover evidence of such abuse, it will move decisively to appropriately revise the new statement of applicability.

Oshkosh Truck Corporation and Mack Trucks, Inc., both suggested that the scope of the proposal be modified to broaden its coverage. Oshkosh concluded that because a new cab was mentioned, the provision would prohibit the use of used cabs in vehicle assembly operations. Mack believed that the term "glider kits" would better describe the rebuilding operations being described.

The NHTSA would like to make clear to Oshkosh and others that the proposed paragraph (e) is not intended to regulate all truck rebuilding operations, but only those in which so many major new components are utilized (such as a glider kit) that the vehicle is in many respects a newly-manufactured vehicle. This provision is intended to distinguish the legitimate rebuilding operation in which many new vehicle components are used from the typical assembly-line production of new vehicles. Oshkosh and other manufacturers may rebuild trucks with used components without falling under § 571.7(e).

In consideration of the foregoing, a new paragraph (e) is added to 49 CFR 571.7, *Applicability* . . . .

*Effective date:* October 22, 1975. Because this amendment has the effect of relaxing a requirement for the compliance of vehicles to applicable motor vehicle safety standards, it is found for good cause shown that an immediate effective date is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51).

Issued on October 16, 1975.

Gene G. Mannella  
Acting Administrator

40 F.R. 49340  
October 22, 1975

**PREAMBLE TO AMENDMENT TO PART 571—  
FEDERAL MOTOR VEHICLE SAFETY STANDARDS**

**(Docket No. 75-24; Notice 2)**

This notice amends the definition of "school bus" that appears in 49 CFR 571.3, to conform to the mandate of the Motor Vehicle and School-bus Safety Amendments of 1974 (The Act), Pub. L. 93-492, by expanding the present definition used by the NHTSA in establishing safety requirements.

The NHTSA's present definition of "school bus" (49 CFR 571.3) is based on the design of the vehicle:

"School bus" means a bus designed primarily to carry children to and from school, but not including buses operated by common carriers in urban transportation of school children.

The Act included a definition of "school bus" based on its usage for transporting students, instead of its design:

(14) "schoolbus" means a passenger motor vehicle which is designed to carry more than 10 passengers in addition to the driver, and which the Secretary determines is likely to be significantly used for the purpose of transporting primary, pre-primary, or secondary school students to or from such schools or events related to such schools;

The legislative history of the Act specifically emphasizes Congress' view that the existing definition based on vehicle design is too narrow and should be expanded to include vehicles likely to be used for school student transportation. H.R. Rep. No. 93-1191, 93rd Cong., 2d Session 42 (1974):

Your Committee decided that safety regulation should reach the wide variety of passenger motor vehicles which are actually and significantly used to transport students, not merely those which are primarily designed for this purpose.

The Congressional definition directs the NHTSA (by reference to a Secretarial determination) to establish a regulatory definition that encompasses a described category of bus used for student transportation. The NHTSA subsequently proposed a definition that would accomplish the Congressional intent within the regulatory and enforcement framework of the Act (40 FR 40854, September 4, 1975):

"School bus" means a bus which is equipped to carry more than 10 passengers in addition to the driver and which is sold, or introduced, or delivered for introduction in interstate commerce, for purposes that include carrying students to and from school or related events, but does not include buses designed and sold for operation as a common carrier in urban transportation.

Comments were received from manufacturers and users of school buses (and their associations), the States of Wisconsin and Montana, the California Department of Highway Patrol (CHP), the Vehicle Equipment Safety Commission (VESC), and Mr. George Chambers. The major issue in these comments was the degree to which the proposed definition conformed to Congressional intent. The Motor Vehicle Manufacturers Association (MVMA), Chrysler Corporation, International Harvester (IH), General Motors, and the State of Montana argued that the Congressional expectation of regulating most student-carrying 11-or-more-passenger motor vehicles on the basis of anticipated use could not be reasonably effectuated under the authority of the Act.

The Act provides that "no person shall . . . manufacture for sale, sell, offer for sale, or introduce or deliver for introduction in interstate commerce . . . any motor vehicle . . . unless it is

in conformity with [applicable] standard[s] . . .” (15 U.S.C. § 1397(a)(1)(A)). This provision authorizes placement of responsibility on a seller for compliance with standards that apply to school buses. The Congressional definition clearly directs that the likely use of the vehicle as well as its design be considered in the determination of its status as a school bus. The NHTSA remains convinced that, of all the persons in the chain of distribution who are subject to the Act, the seller is most likely to have knowledge of the likely use of the vehicle.

In essence, the NHTSA proposed that “school bus” be defined as a bus that is sold for purposes that include student transportation. Thus the determination of vehicle classification, in close cases, can be made on the basis of the sales transaction. It would not, however, be based solely on an event that occurs after sale, such as the actual use of the vehicle. The MVMA and others assumed from a reference in the proposal to the “intent” of either party that the seller would be held responsible for the unexpressed intent of the purchaser to use the vehicle for student transportation, although this purpose was unknown to the seller. This is not the case. The seller is not held responsible for more than its knowledge of the purpose of the sale. If the seller has reason to believe that a vehicle will be used for student transportation, it can easily ascertain intended use by requesting a written statement of purpose from the purchaser.

The MVMA suggested that “school bus” be defined as a bus that is equipped for the purpose of carrying primary, pre-primary, or secondary school students to or from schools or related events. This definition falls short of the Congressional mandate to cover vehicles that are “likely to be significantly used for the purpose of transporting . . . students”. For example, all buses purchased for more than a single purpose (e.g., student and faculty transportation) would be excluded from the definition and from coverage by the standards. Also the criterion “equipped for the purpose” of student transportation does not make clear what equipment (e.g., warning lights, school bus seating) would be determinative of the purpose. General Motors’ suggested “designed or equipped for the pur-

pose” is also vague as to the meaning of what element of design or equipment would be determinative of the vehicle’s classification.

General Motors and Wayne Corporation implied that it is unreasonable to hold manufacturers responsible for what happens to a vehicle in the hands of dealers. There is no intent to do this, however. A manufacturer or other entity in the chain of distribution is only to be held responsible for what it knows. If a vehicle is originally produced as a non-school vehicle (a van-type multipurpose passenger vehicle (MPV), for example), and subsequently is sold by a dealer for school transportation purposes, it is the dealer who will be held for any non-compliance with school bus standards, not the manufacturer. Actually, final-stage manufacturers (in some cases dealers) have always undertaken modification of tracks and MPV’s that result in different requirements from the factory installation. This responsibility has not created an impossible burden on the original manufacturer.

Wayne suggested that “school bus” be defined to mean only those vehicles that a user or regulatory authority designates as a school bus by use of exterior identification such as a label or distinctive lighting or color. This criterion, like MVMA’s, falls short of Congress’ evident interest in any vehicle likely to be significantly used for student transportation. Evidently vehicles operated by private schools are not, in many cases, given the exterior identification markings suggested by Wayne.

In conforming its proposal to the Congressional definition, the NHTSA limited “school bus” to a bus that carries at least 11 passengers in addition to the driver. Based on comments received from Wayne and CHIP, it appears that the definition should be expanded slightly to include buses that carry 10 passengers. This eliminates a departure from previous NHTSA vehicle categorization that classifies vehicles with 10 or fewer occupant seating positions as MPV’s or passenger cars and vehicles with 11 or more seating positions as buses. To adhere strictly to the Congressional definition would leave the small group of vehicles that transport 10 students without coverage under either the school bus, the MPV, or the passenger car standards.

Some commenters incorrectly assumed that the Congressional definition of "school bus" established an outer limit on the NHTSA's authority to regulate vehicles that transport students as such. To the contrary, the Congressional definition is a direction to the NHTSA that the new standards in this area must not be applied to a narrower category of vehicle. As long as that direction of Congress is satisfied, the NHTSA is, however, authorized to decide the scope of its standards, and in this case to expand on the Congressional definition to implement the mandate effectively.

In response to Mr. George Chambers' concern that the NHTSA definition is too broad, the NHTSA considers it reasonable to regulate all buses significantly used for transportation of students to and from all schools and related events, not just pre-primary, primary, and secondary schools. The NHTSA concludes that its rewording of the Act's "schools or events related to such schools" as "schools or related events" does not contradict Congressional direction.

Wayne and the National School Transportation Association (NSTA) suggested that buses used in urban transportation must be included in the definition of "school bus" because they are used in some circumstances to transport students to and from school. It is true that the phrase "likely to be significantly used for the purpose of transporting . . . students to or from . . . schools" could arguably be considered to cover transit buses on regular common-carrier routes. Such buses have been explicitly excluded from the NHTSA's definition for several years, however. In light of the major standard-setting activity mandated by Congress in the Act, it is unlikely that such a broad change of regulatory direction would be contemplated by Congress without explicit discussion at some point in the legislative history. The legislative history contains no indication of such a Congressional intent, and this agency therefore concludes that such coverage was not intended. The boundaries of coverage are explicitly left by the statute to agency determination. In light of the purposes for which the school bus standards are being developed, their expected costs and benefits, and the modes of use of transit buses, the NHTSA has concluded that the continued exclusion of

buses designed and sold for operation as common carriers in urban transportation is in the public interest.

Mr. George Chambers suggested that limiting the exclusion of transit-type buses to those in urban areas appeared to be illogical. The NHTSA has satisfactorily used this limit for several years, and no problems have developed. If difficulties should appear in the future, further modification of the definition will be considered.

The MVMA and General Motors suggested that the existing description of transit-type buses ("operated" as a common carrier) more simply describes the excluded class than NHTSA's proposed language ("designed and sold"). By limiting the exclusion to buses designed and sold for use as common carriers, the definition conforms to the areas (design and sale) over which the agency has jurisdiction under the statute.

Wayne and the States of Wisconsin and Montana questioned the wisdom of limiting the definition to buses (10 passengers or more), when some school vehicles for handicapped students are equipped for fewer than 10 passengers and would not be required to meet the standards. The NHTSA has carefully considered extension of school bus standards to vehicles other than buses, but concludes that the standards in question have been developed for vehicles with bus seating and loading characteristics. For example, the proposed bus passenger seating and crash protection standard is calculated for cab-chassis and van-type vehicles with seating for 10 passengers or more.

The VESC asked that only buses primarily used for transportation of students be considered school buses, so that buses used primarily for other purposes would not be able to display the distinctive school bus markings or be used to transport students after their systems had deteriorated in some more abusive use. The agency views the Congressional emphasis on "significant" use of a vehicle as a direction to extend the school bus standards to all buses that transport students, whether or not it is their primary purpose. For the same reason, the NHTSA does not agree with Blue Bird Body Company's opinion that "activity" buses should be excluded from the Congressionally-mandated standards.

It appears that Congress intended all the school bus standards to apply to buses that carry students to or from events related to their schools.

The definition basically relies on the sales transaction for determination of a vehicle's status. In some cases vehicles are leased for the purpose of transporting students, and it is for this reason that the definition refers to "introduction in interstate commerce" as well as sale. The description of this "no-sale" event has been simplified somewhat in response to the comments.

The California Department of Highway Patrol asked whether motor vehicles with a capacity of less than 11 occupants (12 as proposed) that transport students are preempted from regulation by the States as school buses. The answer is no. Since motor vehicles with a capacity of fewer than 11 occupants are not regulated as school buses by the NHTSA, State school bus regulations, to the extent that they apply to such smaller vehicles, would not be preempted by the NHTSA school bus standards. For instance, brake systems of MPV's are not regulated by the NHTSA and may be governed by State regulations. Of course, State regulations may not conflict with standards applicable to these vehicles as passenger cars or MPV's.

The State of Montana believed that the definitions of Type I and Type II school buses would be affected by this redefinition. In fact neither the present definition nor the new definition conflict with State or Highway Safety Standard definitions (such as the Pupil Transportation Standard No. 17) that regulate the operation of the vehicle, so long as those operational regulations do not dictate the design and performance of the vehicle to the degree that it is subject to a safety standard.

In consideration of the foregoing, the definition of "school bus" in Title 49 of the Code of Federal Regulations (49 CFR § 571.3) is amended . . . .

*Effective date:* October 27, 1976.

(Sec. 102, 103, 119, Pub. L. 89-563, 80 Stat. 718, as amended by Pub. L. 93-492, 88 Stat. 1470 (15 U.S.C. 1391, 1392, 1407); delegation of authority at 49 CFR 1.50)

Issued on December 23, 1975.

James B. Gregory  
Administrator

**December 31, 1975**  
**40 F.R. 60033**

## PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS

### SUBPART A—GENERAL

#### § 571.1 Scope.

This part contains the Federal Motor Vehicle Safety Standards for motor vehicles and motor vehicle equipment established under section 103 of the National Traffic and Motor Vehicle Safety Act of 1966 (80 Stat. 718).

#### § 571.3 Definitions.

(a) *Statutory definitions.* All terms defined in section 102 of the Act are used in their statutory meaning.

(b) *Other definitions.* As used in this chapter "Act" means the National Traffic and Motor Vehicle Safety Act of 1966 (80 Stat. 718).

"Approved," unless used with reference to another person, means approved by the Secretary.

"Boat trailer" means a trailer designed with cradle-type mountings to transport a boat and configured to permit launching of the boat from the rear of the trailer.

"Bus" means a motor vehicle with motive power, except a trailer, designed for carrying more than 10 persons.

"Curb weight" means the weight of a motor vehicle with standard equipment; maximum capacity of engine fuel, oil, and coolant; and, if so equipped, air conditioning and additional weight optional engine.

"Designated seating capacity" means the number of designated seating positions provided.

"Designated seating position" means any plan view location intended by the manufacturer to provide seating accommodation [while the vehicle is in motion] for a person at least as large as a 5th percentile adult female, except auxiliary seating accommodations such as temporary or folding jump seats. (35 F.R. 15222—Sept. 30, 1970. Effective: 1/1/71)

"Driver" means the occupant of a motor vehicle seated immediately behind the steering control system.

"Emergency brake" means a mechanism designed to stop a motor vehicle after a failure of the service brake.

"5th percentile adult female" means a person possessing the dimensions and weight of the 5th percentile adult female specified for the total age group in Public Health Service Publication No. 1000, Series 11, No. 8, "Weight, Height, and Selected Body Dimensions of Adults."

["Fixed collision barrier" means a flat, vertical, unyielding surface with the following characteristics:

(1) The surface is sufficiently large that when struck by a tested vehicle, no portion of the vehicle projects or passes beyond the surface.

(2) The approach is a horizontal surface that is large enough for the vehicle to attain a stable attitude during its approach to the barrier, and that does not restrict vehicle motion during impact.

(3) When struck by a vehicle, the surface and its supporting structure absorb no significant portion of the vehicle's kinetic energy, so that a performance requirement described in terms of impact with a fixed collision barrier must be met no matter how small an amount of energy is absorbed by the barrier. (35 F.R. 11242—July 14, 1970. Effective: 9/1/70)]

["Firefighting vehicle" means a vehicle designed exclusively for the purpose of fighting fires. (36 F.R. 13926—July 28, 1971. Effective: 9/1/71)]

"Forward control" means a configuration in which more than half of the engine length is rearward of the foremost point of the windshield base and the steering wheel hub is in the forward quarter of the vehicle length.

["Gross axle weight rating" or "GAWR" means the value specified by the vehicle manufacturer as the load-carrying capacity of a single axle system, as measured at the tire-ground interfaces. (37 F.R. 3185—February 12, 1972. Effective: 2/12/72)]

["Gross combination weight rating" or "GCWR" means the value specified by the manufacturer as the loaded weight of a combination vehicle. (36 F.R. 2511—February 5, 1971. Effective: 2/5/71)]

["Gross vehicle weight rating" or "GVWR" means the value specified by the manufacturer as the loaded weight of a single vehicle. (36 F.R. 2511—Feb. 5, 1971. Effective: 2/5/71)]

"H point" means the mechanically hinged hip point of a manikin which simulates the actual pivot center of the human torso and thigh, described in SAE Recommended Practice J826, "Manikin for Use in Defining Vehicle Seating Accommodations," November 1962.

"Head impact area" means all non-glazed surfaces of the interior of a vehicle that are statically contactable by a 6.5-inch diameter spherical head form of a measuring device having a pivot point to "top-of-head" dimension infinitely adjustable from 29 to 33 inches in accordance with the following procedure, or its graphic equivalent:

(a) At each designated seating position, place the pivot point of the measuring device—

(1) For seats that are adjustable fore and aft, at—

(i) The seating reference point; and

(ii) A point 5 inches horizontally forward of the seating reference point and vertically above the seating reference point an amount equal to the rise which results from a 5-inch forward adjustment of the seat or 0.75 inches; and

(2) For seats that are not adjustable fore and aft, at the seating reference point.

(b) With the pivot point to "top-of-head" dimensions at each value allowed by the device and the interior dimensions of the vehicle, determine all contact points above the lower windshield glass line and forward of the seating reference point.

(c) With the head form at each contact point, and with the device in a vertical position if no contact point exists for a particular adjusted

length, pivot the measuring device forward and downward through all arcs in vertical planes to 90° each side of the vertical longitudinal plane through the seating reference point, until the head form contacts an interior surface or until it is tangent to a horizontal point 1 inch above the seating reference point, whichever occurs first.

"Includes" means includes but is not limited to.

"Interior compartment door" means any door in the interior of the vehicle installed by the manufacturer as a cover for storage space normally used for personal effects.

["Longitudinal" or "longitudinally" means parallel to the longitudinal centerline of the vehicle. (36 F.R. 2511—February 5, 1971. Effective: 2/5/71)]

["Mobile structure trailer" means a trailer that has a roof and walls, is at least 10 feet wide, and can be used off-road for dwelling or commercial purposes. (35 F.R. 5333—March 31, 1970. Effective: 3/31/70)]

"Motorcycle" means a motor vehicle with motive power having a seat or saddle for the use of the rider and designed to travel on not more than three wheels in contact with the ground.

"Motor-driven cycle" means a motorcycle with a motor that produces 5-brake horsepower or less.

"Multipurpose passenger vehicle" means a motor vehicle with motive power, except a trailer, designed to carry 10 persons or less which is constructed either on a truck chassis or with special features for occasional off-road operation.

["Open-body type vehicle" means a vehicle having no occupant compartment top or an occupant compartment top that can be installed or removed by the user at his convenience.

"Outboard designated seating position" means a designated seating position where a longitudinal vertical plane tangent to the outboard side of the seat cushion is less than 12 inches from the innermost point on the inside surface of the vehicle at a height between the seating reference point and the shoulder reference point (as shown in Figure 1 of Federal Motor Vehicle Safety Standard No. 210) and longitudinally between the front and rear edges of the seat cushion. (35 F.R. 15222—Sept. 30, 1970. Effective: 1/1/72)]

["Overall vehicle width" means the nominal design dimension of the widest part of the vehicle, exclusive of signal lamps, marker lamps, outside rearview mirrors, flexible fender extensions, and mud flaps, determined with doors and windows closed and the wheels in the straight-ahead position. (40 F.R. 8953—March 4, 1975. Effective: 3/1/75)]

"Parking brake" means a mechanism designed to prevent the movement of a stationary motor vehicle.

"Passenger car" means a motor vehicle with motive power, except a multipurpose passenger vehicle, motorcycle, or trailer designed for carrying 10 persons or less.

"Pelvic impact area" means that area of the door or body side panel adjacent to any outboard designated seating position which is bounded by horizontal planes 7 inches above and 4 inches below the seating reference point and vertical transverse planes 8 inches forward and 2 inches rearward of the seating reference point.

"Pole trailer" means a motor vehicle without motive power designed to be drawn by another motor vehicle and attached to the towing vehicle by means of a reach or pole, or by being boomed or otherwise secured to the towing vehicle, for transporting long or irregularly shaped loads such as poles, pipes, or structural members capable generally of sustaining themselves as beams between the supporting connections.

["School bus" means a bus that is sold, or introduced in interstate commerce, for purposes that include carrying students to and from school or related events, but does not include a bus designed and sold for operation as a common carrier in urban transportation. (40 F.R. 60033—December 31, 1975. Effective: 10/27/76)]

"Seating reference point" means the manufacturer's design reference point which—

(a) Establishes the rearmost normal design driving or riding position of each designated seating position in a vehicle.

(b) Has coordinates established relative to the designed vehicle structure;

(c) Simulates the position of the pivot center of the human torso and thigh; and

(d) Is the reference point employed to position the two dimensional templates described in SAE Recommended Practice J826, "Manikins for

Use in Defining Vehicle Seating Accommodations," November 1962.

"Semitrailer" means a trailer, except a pole trailer, so constructed that a substantial part of its weight rests upon or is carried by another motor vehicle.

"Service brake" means the primary mechanism designed to stop a motor vehicle.

"Torso line" means the line connecting the "H" point and the shoulder reference point as defined in SAE Recommended Practice J787b, "Motor Vehicle Seat Belt Anchorage," September 1966.

"Trailer" means a motor vehicle with or without motive power, designed for carrying persons or property and for being drawn by another motor vehicle.

"Trailer converter dolly" means a trailer chassis equipped with one or more axles, a lower half of a fifth wheel and a drawbar.

"Truck" means a motor vehicle with motive power, except a trailer, designed primarily for the transportation of property or special purpose equipment.

"Truck tractor" means a truck designed primarily for drawing other motor vehicles and not so constructed as to carry a load other than a part of the weight of the vehicle and the load so drawn.

["Unloaded vehicle weight" means the weight of a vehicle with maximum capacity of all fluids necessary for operation of the vehicle, but without cargo or occupants. (36 F.R. 2511—February 5, 1971. Effective: 2/5/71)]

"95th percentile adult male" means a person possessing the dimensions and weight of the 95th percentile adult male specified in Public Health Service Publication No. 1000, Series 11, No. 8, "Weight, Height, and Selected Body Dimensions of Adults."

#### § 571.4 Explanation of usage.

The word "any," used in connection with a range of values or set of items in the requirements, conditions, and procedures of the standards or regulations in this chapter, means generally the totality of the items or values, any one of which may be selected by the Administration for testing, except where clearly specified otherwise.

*Examples:* "The vehicle shall meet the requirements of S4.1 when tested at any point between

18 and 22 inches above the ground." This means that the vehicle must be capable of meeting the specified requirements at every point between 18 and 22 inches above the ground. The test in question for a given vehicle may call for a single test (a single impact, for example), but the vehicle must meet the requirement at whatever point the Administration selects, within the specified range.

"Each tire shall be capable of meeting the requirements of this standard when mounted on any rim specified by the manufacturer as suitable for use with that tire." This means that, where the manufacturer specifies more than one rim as suitable for use with a tire, the tire must meet the requirements with whatever rim the Administration selects from the specified group.

"Any one of the items listed below may, at the option of the manufacturer, be substituted for the hardware specified in S4.1." Here the wording clearly indicates that the selection of items is at the manufacturer's option. (36 F.R. 2511—February 5, 1971. Effective: 2/5/71)】

#### §571.5 Matter incorporated by reference.

(a) *Incorporation.* There are hereby incorporated, by reference into this Part, all materials referred to in any standard in Subpart B of this part that are not set forth in full in the standard. These materials are thereby made part of this regulation. Materials subject to change are incorporated as they are in effect on the date of adoption of this Part, unless the reference to them provides otherwise.

(b) *Availability.* The materials incorporated by reference, other than acts of Congress and matter published elsewhere in the *Federal Register*, are available as follows:

【(1) *Standards of the Society of Automotive Engineers (SAE).* They are published by the Society of Automotive Engineers, Incorporated. Information and copies may be obtained by writing to: Society of Automotive Engineers, Inc., 2 Pennsylvania Plaza, New York, New York, 10001. (33 F.R. 11117—Aug 6, 1968)】

(2) *Standards of the American Society for Testing and Materials.* They are published by the American Society for Testing and Materials. Information on copies may be obtained by writing to the American Society for Testing

and Materials, 1916 Race Street, Philadelphia, Pennsylvania, 19103.

(3) *Standards of the United States of America Standards Institute.* They are published by the United States of America Standards Institute. Information and copies may be obtained by writing the United States of America Standards Institute, 10 East 40th Street, New York, New York, 10016.

(4) *Data from the National Health Survey, Public Health Publication No. 1000, Series 11, No. 8.* This is published by the U.S. Department of Health, Education, and Welfare. Copies may be obtained for a price of 35 cents from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C., 20402.

All incorporated materials are available for inspection at the Docket Room, National Highway Traffic Safety Administration, 400 7th Street, S.W., Washington, D.C. 20590.

#### § 571.7 Applicability.

(a) *General.* 【Except as provided in paragraphs (c) and (d) of this section, each standard set forth in Subpart B of this part applies according to its terms to all motor vehicles or items of motor vehicle equipment the manufacture of which is completed on or after the effective date of the standard. (38 F.R. 12808—May 16, 1973. Effective: 1/1/74)】

(b) *Chassis-cabs.* Chassis-cabs, as defined in 371.3(b), manufactured on or after January 1, 1968, shall meet all standards in effect on the date of manufacture of the chassis-cab as are applicable to the principal end use intended by its manufacturer except that where the chassis-cab is equipped with only part and not all of the items of lighting equipment referred to in standard No. 108, it need not meet such standards. (REVOKED 36 F.R. 7055. EFFECTIVE: 4/14/71)

(c) *Military vehicles.* No standard applies to a vehicle or item of equipment manufactured for, and sold directly to, the Armed Forces of the United States in conformity with contractual specifications.

(d) *Export.* No standard applies to a vehicle or item of equipment in the circumstances provided in section 108(b)(5) of the Act (15 U.S.C. 1397(b)(5)).

[(e) *Combining and new used components.* When a new cab is used in the assembly of a truck, the truck will be considered newly manufactured for purposes of paragraph (a) of this section, the application of the requirements of this chapter, and the Act, unless the engine, transmission, and drive axle(s) (as a minimum) of the assembled vehicle are not new, and at least two of these components were taken from the same vehicle. (40 F.R. 49340—October 22, 1975. Effective: 10/22/75)]

**[§ 571.8 Effective date.**

Notwithstanding the effective date provisions of the motor vehicle safety standards in this part, the effective date of any standard or amendment of a standard issued after September 1, 1971, to which firefighting vehicles must conform shall be, with respect to such vehicles, either 2 years after the date on which such standard or amendment is published in the Rules and Regulations section of the *Federal Register*, or the effective date specified in the notice, whichever is later, except as such standard or amendment may otherwise specifically provide with respect to firefighting vehicles. (36 F.R. 13926—July 28, 1971. Effective: 9/1/71)]

**§ 571.9 Separability.**

If any standard established in this part or its application to any person or circumstance is held invalid, the remainder of the part and the application of that standard to other persons or circumstances is not affected thereby.

**[§ 571.13 Labeling of chassis-cabs.**

Each chassis-cab manufactured on or after January 1, 1968, shall, at the time of sale, conspicuously display a label affixed by its manufacturer that—

(a) Identifies it as a chassis-cab and shows the date of manufacture;

(b) Identifies the Federal motor vehicle safety standards with which its manufacturer states the chassis-cab fully complied for the principal end uses of such vehicle; and

(c) States in substance that the chassis-cab may be used on the public highways for the purpose of transit between its manufacturer and subsequent manufacturers (including distribution

incidental thereto) and for no other purpose, until such time as the chassis-cab complies with all Federal motor vehicle safety standards applicable to any end use of such vehicle. This provision does not relieve the manufacturer or shipper from any applicable requirement imposed upon such chassis-cabs by Federal, State, or local authority. (33 F.R. 19—Jan. 3, 1968)] (REVOKED 36 F.R. 7055. EFFECTIVE: 1/1/72)

**Interpretations**

**General.** Compliance with Initial Federal Motor Vehicle Safety Standards is determined by actual date of manufacture, rather than model year designation.

**Mini-bikes.**

A number of persons have asked the Federal Highway Administrator to reconsider his February 4, 1969 interpretation of the National Traffic and Motor Vehicle Safety Act of 1966 concerning mini-bikes. In that interpretation, the Administrator concluded that mini-bikes are "motor vehicles" within the meaning of section 102(3) of the Act, and are regarded as "motorcycles" or "motor-driven cycles" under the Federal Highway Administration regulations. Under those regulations, motorcycles and motor-driven cycles must conform to Motor Vehicle Safety Standard No. 108, which imposes performance requirements relating to lamps, reflective devices, and associated equipment.

The primary basis for the conclusion of the February 4 interpretation, as stated therein, was that "[i]n the absence of clear evidence that as a practical matter a vehicle is not being, or will not be, used on the public streets, roads, or highways the operating capability of a vehicle is the most relevant fact in determining whether or not that vehicle is a motor vehicle under the Act . . ." It was stated that if examination of a vehicle's operating capability revealed that the vehicle is "physically capable (either as offered for sale or without major additions or modifications) of being operated on the public streets, roads, or highways, the vehicle will be considered as having been 'manufactured primarily for use on the public streets, roads, and highways.'" It was also stated that a manufacturer would need to show substantially more than that it has adver-

tised a vehicle as a recreational or private property vehicle or that use of the vehicle on a public roadway, as manufactured and sold, would be illegal in order to overcome a conclusion based on examination of the vehicle's operating capability.

Petitioners have urged the Administrator to abandon the operating capability test. They have argued that many vehicular types, such as self-propelled riding mowers, have an "operating capability" for use on the public roads and yet are obviously outside the class of vehicles which Congress subjected to safety regulation. True as that may be, the Administrator has decided to adhere to the view that the operating capability of a vehicle is an important criterion in determining whether it is a "motor vehicle" within the meaning of the statute. As the above-quoted portion of the February 4, 1969 interpretation states, however, the operating capability test is not reached if there is "clear evidence that as a practical matter the vehicle is not being used on the public streets, roads, or highways." In the case of self-propelled riding mowers, golf carts, and many other similar self-propelled vehicles, such clear evidence exists.

It is clear from the definition of "motor vehicle" in section 102(3) of the Act\* that the purpose for which a vehicle is manufactured is a basic factor in determining whether it was "manufactured primarily for use on the public streets, roads, and highways." However, this does not mean that the proper classification of a particular vehicle is wholly dependent on the manufacturer's subjective state of mind. Instead, the Administrator intends to invoke the familiar principle that the purpose for which an act, such as the production of a vehicle, is undertaken may be discerned from the actor's conduct in the light of the surrounding circumstances. Thus, if a vehicle is operationally capable of being used on public thoroughfares and if in fact a substantial proportion of the consuming public actually uses it that way, it is a "motor vehicle" without regard to the manufacturer's intent, however manifested.

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\* "Motor vehicle" means any vehicle driven or drawn by mechanical power manufactured primarily for use on the public streets, roads, and highways, except any vehicle operated exclusively on a rail or rails." 15 U.S.C. 1391(3).

In such a case, it would be incumbent upon a manufacturer of such a vehicle either to alter the vehicle's design, configuration, and equipment to render it unsuitable for on-road use or, by compliance with applicable motor vehicle safety standards, to render the vehicle safe for use on public streets, roads, and highways.

In borderline cases, other factors must also be considered. Perhaps the most important of these is whether state and local laws permit the vehicle in question to be used and registered for use on public highways. The nature of the manufacturer's promotional and marketing activities is also evidence of the use for which the vehicle is manufactured. Some relevant aspects of those activities are: (1) whether the vehicle is advertised for on-road use or whether the manufacturer represents to the public that the vehicle is not for use on public roads; (2) whether the vehicle is sold through retail outlets that also deal in conventional motor vehicles; and (3) whether the manufacturer affixes a label warning owners of the vehicle not to use it for travel over public roads.

In the first instance, each manufacturer must decide whether his vehicles are manufactured primarily for use on the public streets, roads, and highways. His decision cannot be conclusive, however. Under the law, the authority to determine whether vehicles are subject to the provisions of the National Traffic and Motor Vehicle Safety Act is vested in the Secretary. As delegate of the Secretary, the Administrator will exercise that power in the light of all of the relevant facts and circumstances (including the manufacturer's declaration of his intent) with the objective of reducing the toll of injuries and deaths on the public highways.

Analysis of the available data about mini-bikes, including the contents of petitions for reconsideration of the February 4, 1969 interpretation, has convinced the Administrator that, for the most part, mini-bikes should not be considered motor vehicles under the above criteria. Mini-bikes do have an operating capability for use on public roads. It now appears that incidents of their actual operation on public streets, roads, and highways, while undoubtedly extant, are comparatively rare. What is more important, their use and registration for use on public thorough-

fares is precluded by the laws of virtually every jurisdiction, unless the mini-bike is equipped with lamps, reflective devices, and associated equipment of the sort that Safety Standard No. 108 requires. Most manufacturers of mini-bikes do not advertise or otherwise promote them as being suitable for use on public roads, and some actually attach a label to their vehicles, warning against on-road use. Those manufacturers do not furnish retail purchasers with the documentation needed to register, title, and license the vehicles for use on public roads under the relevant State laws. Finally, mini-bikes are commonly sold to the public through retail outlets that are not licensed dealers in motor vehicles.

Accordingly, so long as the great majority of the States do not permit the registration of mini-bikes for use on the public highways and streets, and until such time as there is clear evidence that mini-bikes are being used on public streets to a significant extent, the Administrator is of the view that, at a minimum, persons who manufacture mini-bikes are not manufacturers of "motor vehicles" within the meaning of the National Traffic and Motor Vehicle Safety Act of 1966 if they (1) do not equip them with devices and accessories that render them lawful for use and registration for use on public highways under state and local laws; (2) do not otherwise participate or assist in making the vehicles lawful for operation on public roads (as by furnishing certificates of origin or other title documents, unless those documents contain a statement that the vehicles were not manufactured for use on public streets, roads, or highways); (3) do not advertise or promote them as vehicles suitable for use on public roads; (4) do not generally market them through retail dealers in motor vehicles; and (5) affix to the mini-bikes a notice stating in substance that the vehicles were not manufactured for use on public streets, roads, or highways and warning operators against such use. Cases of manufacturers who fulfill some, but not all, of the above criteria will be dealt with individually under those criteria and such others as may be relevant.

A manufacturer of mini-bikes is, of course, at liberty to design and construct his products so that they conform to the provisions of the motor vehicle safety standards that are applicable to motorcycles and thereby to manufacture motor

vehicles within the meaning of the National Traffic and Motor Vehicle Safety Act.

In consideration of the foregoing, the petitions for reconsideration of the February 4, 1969 interpretation relating to mini-bikes are granted to the extent set forth above, and that interpretation is withdrawn.

Issued on Sept. 30, 1969.

#### **[Limits on State Enforcement Procedures**

The Japan Automobile Manufacturers Association has brought to the attention of the NHTSA, in a petition for reconsideration of Standard No. 209, some leadtime problems that may be caused by the safety standard enforcement practices of some of the States. These States require manufacturers to submit samples of motor vehicle equipment covered by one of the standards, such as seat belt assemblies, to a State-authorized test laboratory. The test reports from the laboratory are then submitted to a State agency or an outside agency such as the American Association of Motor Vehicle Administrators, which issues an "approval" to the manufacturer. The problem arises in cases where the State does not permit the manufacturer to sell the equipment in that State until the approval is received. If the leadtime between the issuance of a standard or amendment and its effective date is fairly short, the manufacturer may not have time to prepare and submit samples and to obtain the State-required approval before the effective date of the standard. Thus, the manufacturer may be prohibited from selling his product in the State on and after the effective date, even though it fully complies with all applicable Federal standards and regulations.

The substantive relationship between Federal and State safety standards was established by Congress in section 103(d) of the National Traffic and Motor Vehicle Safety Act, which provides:

"Whenever a Federal motor vehicle safety standard established under this title is in effect, no State or political subdivision of a State shall have any authority either to establish, or to continue in effect, with respect to any motor vehicle or item of motor vehicle equipment any safety standard applicable to the same aspect of performance of such ve-

hicle or item of equipment which is not identical to the Federal Standard.”

Although this section makes it clear that State standards must be “identical” to the Federal standards to the extent of the latter’s coverage, the procedural relationship between State and Federal enforcement of the standard is not explicitly stated in the Act. It has been the position of this agency that the Act permits the States to enforce the standards, independently of the Federal enforcement effort, since otherwise there would have been no reason for the Act to allow the States to have even “identical” standards. The question raised by the JAMA petition is to what extent the States may utilize an enforcement scheme that differs from the Federal one established by the Act.

The basic structure of the Act places the burden of conformity to the standards on the manufacturers, who must exercise due care to determine that all their products comply with applicable standards (§§ 103, 108, 15 U.S.C. 1392, 1397). They must certify each vehicle and item of covered equipment as conforming to the standards (§ 114, 15 U.S.C. 1403). No prior approval of a manufacturer’s products is provided for or contemplated by the Act. The NHTSA does not issue such approvals, but tests the products after they come onto the market to determine whether they conform. Thus, the effective date of a standard is established on the basis of the agency’s judgment as to the length of time it will take manufacturers to design and prepare to produce a vehicle or item of equipment, and is not intended to allow time for obtaining governmental approval after production begins.

In this light, a State requirement of obtaining prior approval before a product may be sold conflicts with the Federal regulatory scheme. The legislative history does not offer specific guidance on the question, except for general statements such as the following by Senator Magnuson:

“Some States have more stringent laws than others, but concerning the car itself we must have uniformity. That is why the bill suggests to States that if we set a minimum standard, *a car complying with such standard should be admitted to all States.*” 112 Cong. Rec. 13585, June 24, 1966.

“[W]e have provided in the bill for foreign cars, that they must comply with the standards; and *we have even allowed them to come in under a free-port arrangement*, where, if they are not in compliance, dealers can bring them up to the standard.” 12 Cong. Rec. 13587, June 24, 1966. (Emphasis supplied.)

It is true that Senator Magnuson in the above statements was not directly considering the question of State enforcement. But Congress does not appear to have contemplated the existence of State procedures that would restrict the free movement of vehicles and equipment, or place significant burdens on the manufacturers, in areas covered by the Federal standards, beyond those imposed by the standards themselves.

It is the position of this agency, therefore, that under the Act and the regulatory scheme that has been established by its authority a State may not regulate motor vehicles or motor vehicle equipment, with respect to aspects of performance covered by Federal standards, by requiring prior State approval before sale or otherwise restricting the manufacture, sale, or movement within the State of products that conform to the standards. This interpretation does not preclude State enforcement of standards by other reasonable procedures that do not impose undue burdens on the manufacturers, including submission of products for approval within reasonable time limits, as long as manufacturers are free to market their products while the procedures are being followed, as they are under the Federal scheme. (36 F.R. 10744—June 2, 1971)】

Issued on May 13, 1971.

#### SUBPART B—STANDARDS

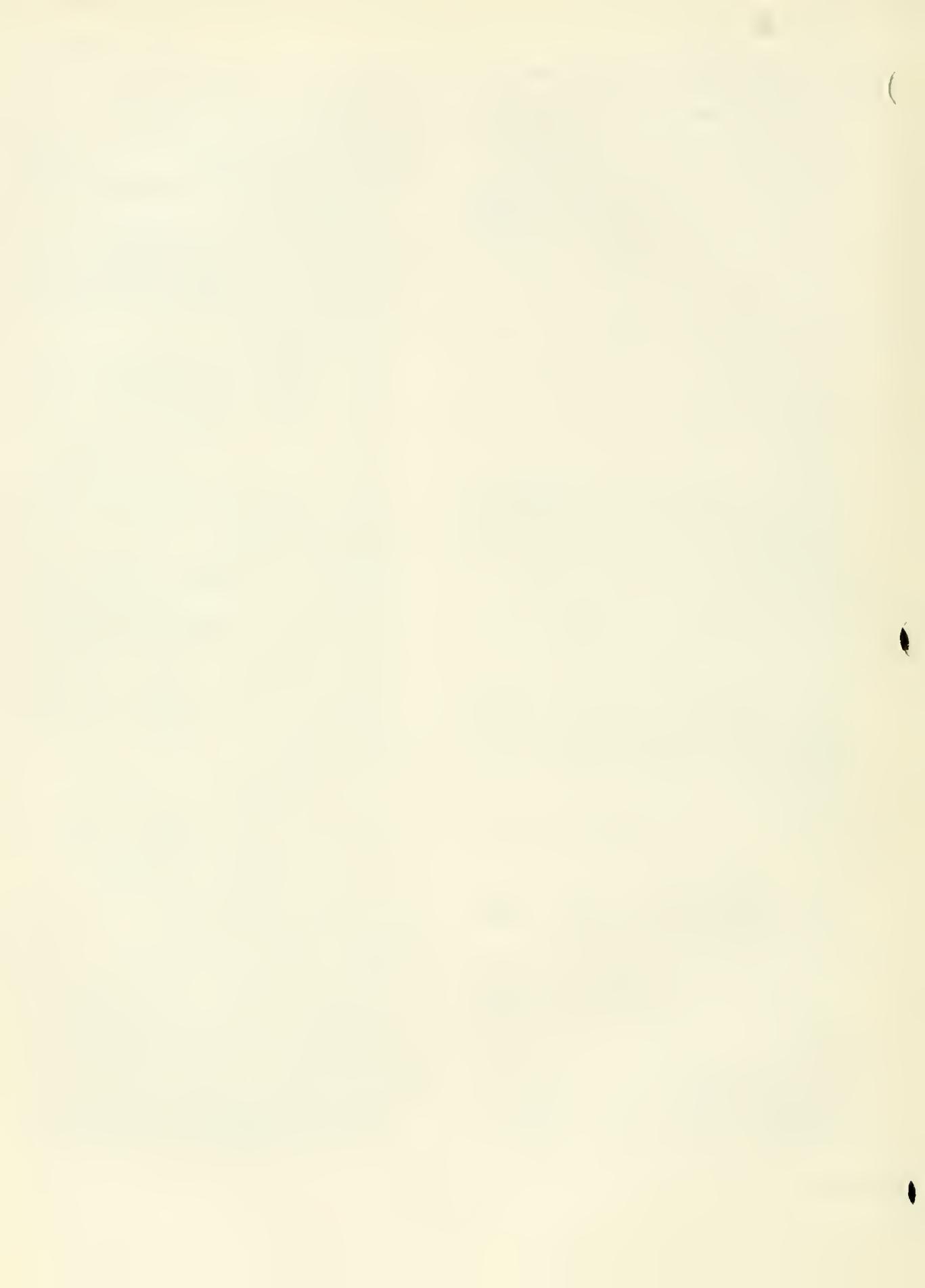
##### § 571.21 Federal Motor Vehicle Safety Standards.

The Federal Motor Vehicle Safety Standards are set forth in this subpart.

##### Motor Vehicle Safety Standard Numbers and Titles

- 101 Control Location, Identification and Illumination—Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses
- 102 Transmission Shift Lever Sequence, Starter Interlock and Transmission Braking Ef-

- ect—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses
- 103 Windshield Defrosting and Defogging Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses
- 104 Windshield Wiping and Washing Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses
- 105 Hydraulic Service Brake, Emergency Brake, and Parking Brake Systems—Passenger Cars
- 105-75 Hydraulic Brake Systems
- 106 Hydraulic Brake Hoses—Passenger Cars and Multipurpose Passenger Vehicles
- 106-74 Brake Hoses
- 107 Reflecting Surfaces—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses
- 108 Lamps, Reflective Devices and Associated Equipment—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses, Trailers and Motorcycles
- 109 New Pneumatic Tires—Passenger Cars
- 110 Tire Selection and Rims—Passenger Cars
- 111 Rearview Mirrors—Passenger Cars and Multipurpose Passenger Vehicles
- 112 Headlamp Concealment Devices—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses and Motorcycles
- 113 Hood Latch Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses
- 114 Theft Protection—Passenger Cars
- 115 Vehicle Identification Number—Passenger Cars
- 116 Motor Vehicle Brake Fluids—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses and Motorcycles
- 117 Retreaded Pneumatic Tires
- 118 Power-Operated Window Systems—Passenger Cars and Multipurpose Passenger Vehicles
- 119 New Pneumatic Tires for Vehicles Other Than Passenger Cars
- 121 Air Brake Systems—Trucks, Buses and Trailers
- 122 Motorcycle Brake Systems
- 123 Motorcycle Controls and Displays
- 124 Accelerator Control Systems
- 125 Warning Devices
- 126 Truck-Camper Loading
- 201 Occupant Protection in Interior Impact—Passenger Cars
- 202 Head Restraints—Passenger Cars
- 203 Impact Protection for the Driver From the Steering Control System—Passenger Cars
- 204 Steering Control Rearward Displacement—Passenger Cars
- 205 Glazing Materials
- 206 Door Locks and Door Retention Components—Passenger Cars, Multipurpose Passenger Vehicles and Trucks
- 207 Seating Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses
- 208 Occupant Crash Protection—Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses
- 209 Seat Belt Assemblies—Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses
- 210 Seat Belt Assembly Anchorages—Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses
- 211 Wheel Nuts, Wheel Discs, and Hub Caps—Passenger Cars and Multipurpose Passenger Vehicles
- 212 Windshield Mounting—Passenger Cars
- 213 Child Seating Systems
- 214 Side Door Strength—Passenger Cars
- 215 Exterior Protection—Passenger Cars
- 216 Roof Crush Resistance—Passenger Cars
- 217 Bus Window Retention and Release
- 218 Motorcycle Helmets
- 219 Windshield Zone Intrusion
- 220 School Bus Rollover Protection
- 221 School Bus Body Joint Strength
- 222 School Bus Seating and Crash Protection
- 301 Fuel Tanks, Fuel Tank Filler Pipes, and Fuel Tank Connections—Passenger Cars
- 301-75 Fuel System Integrity
- 302 Flammability of Interior Materials—Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses



## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 101

### Control Location, Identification and Illumination—Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses (Docket No. 1-18)

This notice amends § 571.21 of Title 49, Code of Federal Regulations, Motor Vehicle Safety Standard No. 101, Control Location, Identification, and Illumination, to establish new requirements and extend its application to multipurpose passenger vehicles, trucks, and buses. A proposal to amend Standard No. 101 (Docket No. 1-18; Notice No. 2) was published in the *Federal Register* on April 15, 1970 (35 F.R. 6151). Interested persons have been afforded an opportunity to participate in the rule making process, and their comments have been carefully considered.

As proposed, the applicability of the standard is being extended to multipurpose passenger vehicles, trucks, and buses, and these vehicles must now meet the requirements previously applicable only to passenger cars. Location, identification, and illumination requirements for spring brake valve, emergency spring brake release valve and tractor protection valve have not been adopted because of new proposals covering these controls contained in the proposed standard on air brake systems (Docket No. 70-17; 35 F.R. 10368).

The location requirement is that controls be accessible to an operator seated at the controls and restrained by nonextending upper torso and pelvic restraints. The restraint specification should be viewed as a hypothetical rather than a literal guideline. In the absence of data which allow the use of specific tolerances, the Bureau believes that the most acceptable substitute insuring accessibility of controls is that they be available to an operator seated in the position he would be in were the vehicle equipped with nonextending restraints and were those restraints properly fastened. This limitation on driver

movement is intended to implement the safety purpose of the standard which is "to reduce the hazards caused by the diversion of the driver's attention from the motoring environment". The location requirement applies to controls for steering, horn, transmission shift, ignition, headlamps, turn signals, illumination intensity control, windshield wiping, windshield washing, manual choke, and driver's sun visor. Eleven controls are now required to be identified: Engine start, engine stop, choke, throttle, headlamps and taillamps, clearance lamps, identification lamps, vehicular hazard warning signal, windshield wiping system, windshield washing system, and windshield defrosting and defogging system. The proposal that foot-operated controls be identified has not been adopted. The Bureau concurs with the comments pointing out that identification of such controls would be difficult to read, and that relative position on the floorboard is a more important guide to identification.

Comments were received expressing the view that use of both words and symbols to identify controls was unnecessary and space consuming. In the absence of internationally accepted symbols, it has been decided that symbols should not be made mandatory, and the proposed requirement that symbols identify certain controls has not been adopted. However, the Bureau has surveyed symbols proposed by various national and international organizations, and has selected several for optional use by manufacturers as encouragement for their universal adoption. As originally proposed the use of symbols other than those shown and for other than the controls specified (head and taillamps,

vehicular hazard warning signal, clearance lamps, windshield wiping system, and windshield washing system) is prohibited, to insure that there is no proliferation of confusing and unacceptable symbols. Identification and illumination of a key locking system used to control engine starting or stopping will not be required.

The proposal that certain vehicle controls be illuminated has been adopted with modifications. The nine controls for which illumination is required are: engine stop, automatic vehicle speed control, vehicular hazard warning signal, clearance lamps, identification lamps, windshield wiping system, windshield washing system, windshield defrosting and defogging system, and the heating and air conditioning system. However, foot-operated controls and controls mounted on the steering column will not be required to be illuminated because lighting would cause glare, distraction to the driver and excess light in the driver's compartment. In addition only the identification of the control, and not the control itself, will have to be illuminated since enough light is normally present to mark the control.

In consideration of the foregoing, 49 CFR 571.21, Federal Motor Vehicle Safety Standard No. 101, Control Location and Identification, is amended as set forth below.

*Effective date.* Passenger cars: Control location and identification requirements, January 1, 1972; control illumination requirements, September 1, 1972. Multipurpose passenger vehicles, trucks, and buses: All requirements, September 1, 1972. Because of the need, demonstrated in the comments, for adequate leadtime for manufacturers to make the design changes required by this standard, it is found that effective dates later than 1 year from the date of issuance are in the public interest.

Issued on December 31, 1970.

Douglas W. Toms,  
Director,  
National Highway Safety Bureau.

36 F.R. 503  
January 14, 1971

## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 101

### Control Location, Identification and Illumination—Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses

(Docket No. 1-18)

Motor Vehicle Safety Standard No. 101, establishing requirements for location, identification, and illumination of motor vehicle controls, was amended on January 14, 1971 (36 F.R. 503). Thereafter, pursuant to 49 CFR 553.35 (35 F.R. 5119) petitions for reconsideration of the amendment were filed by Mercedes-Benz of North America, Inc. (Mercedes), Ford Motor Co. (Ford), General Motors Corp. (GM), International Harvester Co. (Harvester), and Recreational Vehicle Institute (RVI).

In response to information contained in several of the petitions the standard is being amended. The Administrator has declined to grant requested relief from other requirements of the standard.

1. *Effective date for vehicles with GVWR over 10,000 pounds.* GM petitioned for an exemption from the standard for trucks and buses with a gross vehicle weight rating over 10,000 pounds, on the grounds that these vehicles have a greater number of controls, which makes them significantly different from passenger cars, and that control requirements for these vehicles merit a separate rulemaking action. GM also alleged that the standard "would require a complete redesign and retooling of the control panels on our large vehicles." Harvester petitioned for a similar exemption from control illumination requirements for heavy vehicles for a period of 5 years and, in the alternative, for an extension of 6 months of the effective date for this requirement to allow phasing out of models for which retooling is impracticable.

Although vehicles with a GVWR in excess of 10,000 pounds are equipped with certain controls lacking in lighter vehicles, the controls which Standard No. 101 presently covers are similar

for all trucks and buses. The NHTSA denies GM's request for exemption of heavy vehicles from the requirements of Standard No. 101 and Harvester's request for a stay of 5 years of the requirements of S4.3. However, good cause has been shown for a delay in the effective date of the illumination requirements of Standard No. 101 for vehicles with a GVWR in excess of 10,000 pounds and therefore the effective date of S4.3 for these vehicles is hereby extended to March 1, 1973.

2. *S4.2 Control identification.* GM, Ford, and Mercedes have petitioned for reconsideration of certain control identification requirements, and have requested clarification of other points. GM has asked that S4.2 be amended to allow the use of symbols or words or symbol-word combinations and Mercedes has made a similar request. GM has also asked permission to use the word "Flasher" rather than "Hazard," and "Deice" for "Defrost." The NHTSA denies these petitions. Use of symbols to identify controls is a comparatively recent development in control identification of American-made vehicles, and the time is premature for controls to be identified on the basis of symbols alone. Use of the word "Hazard" in conjunction with the permissible symbol of the warning triangle will highlight the purpose of this switch in a manner that use of the word "Flasher" will not. Finally, it has been decided that the word "Defrost" is the most appropriate identification of the system in question.

General Motors asked whether the published headlamp identification symbol with nine rays of light was only representative of the required symbol, or definitive in the sense that it must be copied exactly. The NHTSA intends this

symbol to be representative only. A symbol resembling the one published, with as few as three rays of light, may be used to comply with the identification requirement for headlamps and clearance lamps.

Petitioners have asked whether symbols may be used on controls not listed in Table I, whether arrows may be employed to indicate direction of control operation, whether color coding is permitted (e.g. red to indicate heat, blue to indicate cold), whether both primary and secondary controls must be identified and illuminated (e.g. diesel engine stop), and whether additional words may be used to describe control operation or function (e.g. "Pull to defrost"). The answer in each instance is yes as long as the additional words or symbols do not conflict with the required words and permissible symbols.

This agency was also asked whether, literally, "each position of the heating and defrosting and/or air-conditioning control must be identified." Variable temperature increments from "off" to "high" of an adjustable control need not be identified.

Clarification was also requested on the requirement that "identification \* \* \* shall appear to the operator in an up-right position." GM has interpreted this language "to mean perceptually right side up, as opposed to being in a vertical or horizontal plane," and the Administration concurs in this interpretation.

Ford has asked whether controls visible to the driver but not in the normal forward line of sight must be identified. Examples of such controls are column-mounted hazard warning signal controls which may be partially obscured by the steering wheel, and air-conditioning controls on some vehicles which are in an area adjacent to or behind the driver's seat, and can be seen by a seated operator only when he turns his head. Although these controls are designed to be operable by touch, their function is not clear to an operator unfamiliar with the vehicle in which they are installed, and their identification is necessary.

3. *S4.3 Control illumination.* Ford has asked whether steering-wheel-mounted controls are exempt from illumination requirements. Since the steering wheel itself is mounted on the steering

column, the exemption from the illumination requirements for steering column-mounted controls extends to those mounted on the steering wheel as well.

GM requested an exemption for illumination of door side panel controls, alleging that glare may be produced. No sufficient grounds have been shown to exist for such an exemption, however, and therefore this petition is denied.

Air-conditioning controls on certain Harvester vehicles are mounted in the roof area over the driver, and in the Ford Econoline to the driver's rear. Both manufacturers have questioned the appropriateness of requiring illumination of these controls. Since neither system directs air on the windshield and thus cannot create a safety hazard through mis-operation which would befog the windshield, these petitions have been found to have merit, and S.43 is amended to exempt a system of this nature from the illumination requirements.

4. *S5. Conditions.* GM has petitioned for an amendment of S5.1 "to allow use of an inertia reel in testing to the location requirements of S4.1 where such a restraint system is standard equipment, and nonextending restraints are not offered." GM has misinterpreted the test condition of restraint by nonextending devices, whose intent, expressed at 36 F.R. 503, is "to implement the safety purpose of the standard which is 'to reduce the hazards caused by the diversion of the driver's attention from the motoring environment'." The NHTSA has determined that a minimum of driver movement in location and operation of controls meets the need for motor vehicle safety, and a nonextending restraint system, even if such a system is used only for this purpose, is the means chosen to limit the degree of movement needed. GM's petition is therefore denied.

In consideration of the foregoing, S4.3 of Motor Vehicle Safety Standard No. 101 in 49 CFR 571.21 is revised, effective January 1, 1972.

Issued on April 29, 1971.

Douglas W. Toms,  
Acting Administrator.

36 F.R. 8296  
May 4, 1971

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 101 Control Location, Identification, and Illumination

The purpose of this notice is to amend Motor Vehicle Safety Standard No. 101 to clarify control identification, and illumination requirements, and the control location test conditions.

Standard No. 101, *Control Location, Identification, and Illumination*, was amended on January 14, 1971 (36 F.R. 503) and, as a result of reconsideration petitions, was amended again on May 4, 1971 (36 F.R. 8296). General Motors Corporation has asked for a clarification of the requirement in S4.2 that "Each position of . . . a heating or air conditioning system control shall be identified." It points out the virtual impossibility of identification of intermediate positions for rocker-type and push-pull-type switches. The NHTSA agrees that intermediate positions for these types of switches are difficult to identify, and consequently has amended S4.2 to exclude them from the identification requirement.

Ford Motor Company has petitioned for a clarification of the requirement in S4.3 that ". . . A control shall be provided to adjust the intensity of control illumination variable from an 'off' position to a position providing illumination sufficient for the vehicle operator to readily identify the control under conditions of reduced visibility." Specifically, Ford wishes an interpretation that a simple on-off switch is a sufficient variable control.

The NHTSA has determined that a motor vehicle operator should be able to set control

illumination levels according to his own eye comfort and the specific condition of reduced visibility that requires control illumination. Additionally, it is important for a driver to reduce control illumination when the illumination is reflected in the windshield creating a glare condition. The NHTSA intended in the January 14 issuance that a continuously variable "rheostat"-type control be provided, and is amending S4.3 to reflect this intention.

The NHTSA is also amending the restraint test condition of S5.2 to correspond with the recent amendment to Standard No. 208, *Seat Belt Installations*, (36 F.R. 9869) that requires Type 1 seat belt assemblies in, among other vehicles, walk-in van-type trucks, and multipurpose passenger vehicles with a gross vehicle weight rating of more than 10,000 pounds.

In consideration of the foregoing, 49 CFR 571.21, Federal Motor Vehicle Safety Standard No. 101, *Control Location, Identification and Illumination*, is amended. . . .

Issued on July 9, 1971.

Douglas W. Toms  
Acting Administrator

36 F.R. 13215  
July 16, 1971



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 101

### Control Location, Identification and Illumination

(Docket No. 1-18; Notice 6)

The purpose of this notice is to amend Motor Vehicle Safety Standard No. 101 to clarify control identification and illumination requirements and to specify an effective date of September 1, 1973, for continuously variable control illumination.

Standard No. 101, *Control Location, Identification, and Illumination* (36 F.R. 503) was amended on May 4, 1971 (36 F.R. 8296) and July 16, 1971 (36 F.R. 13215). As a result of the latter amendment petitions for reconsideration were received from Ford Motor Company, International Harvester Company, and Jensen Motors, Ltd. American Motors and Chrysler Corporation have also asked for a clarification of control illumination requirements, to which this notice is responsive.

1. *S4.2 Control identification.* The preamble to the amendment published on May 4, 1971, stated that "Variable temperature increments [of a heating and air conditioning system control] from 'off' to 'high' of an adjustable control need not be identified." The amendment of S4.2 published on July 16 excluded identification only of intermediate positions of rocker-type or push-pull type heating and air conditioning system controls. Ford Motor Company has inquired whether the amendment contradicts the preamble statement of May 14, thus requiring identification of each position of heating and air conditioning controls other than rocker or push-pull type. In addition, Chrysler believes the terminology "rocker-type or push-pull type control" may not be sufficiently inclusive or descriptive of controls intended to be covered by the requirement. The Administration believes that these points are well made, and is amending paragraph S4.2 in a manner that clarifies the agency's intent: that

identification shall be provided for each function of any automatic vehicle speed system control and any heating and air conditioning system control, regardless of the type of control, and for the extreme positions of any such control that regulates a function over a quantitative range.

2. *S4.3 Control illumination.* The requirement that control illumination be continuously variable was questioned by Harvester, Jensen, and American Motors, who employ or wish to employ a three-position switch, and Ford, who argued that a simple on-off switch meets the need for motor vehicle safety.

In denying similar petitions for reconsideration in the July 16 notice, the NHTSA commented that "a motor vehicle operator should be able to set control illumination levels according to his own eye comfort and the specific condition of reduced visibility that requires control illumination." Additionally, the Administration noted that "it is important for a driver to reduce control illumination when the illumination is reflected in the windshield creating a glare condition." An on-off or three-position switch cannot provide optimal illumination for the variety of driving situations and driver perception that continuously variable illumination can, and the petitions are therefore denied. However, because compliance will require modifications in the control systems of vehicles manufactured by the petitioners, the agency finds, for good cause shown, that an effective date for this requirement later than September 1, 1972, is in the public interest. Accordingly, paragraph S4.3 is being amended to set a new effective date of September 1, 1973, for continuously variable control illumination.

3. *S5 Conditions*. Ford petitioned that paragraph S5 be amended to specify use of seat restraints in accordance with the requirements of Standard No. 208, *Occupant Crash Protection*. The Ford request has generally been found meritorious. In the case of passenger cars, it has been found appropriate and practicable to maintain the present requirement that the controls be within reach of a driver restrained by a non-extending pelvic and upper torso restraint. For other vehicles, the amended restraint requirement is based upon whether an upper torso restraint is required.

In consideration of the foregoing, 49 CFR 571.101, Federal Motor Vehicle Safety Standard

No. 101, *Control Location, Identification, and Illumination*, is amended. . . .

*Effective date*: January 1, 1972. Since this amendment clarifies existing requirements effective January 1, 1972, and imposes no additional burden, it is found for good cause shown that an effective date earlier than one hundred eighty days after issuance is in the public interest.

Issued on November 24, 1971.

Douglas W. Toms  
Administrator

**36 F.R. 23067**  
**December 3, 1971**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 101

### Control Location, Identification and Illumination

(Docket No. 1-18; Notice 9)

This notice amends Motor Vehicle Safety Standard No. 101 to allow a control position providing minimal illumination, effective September 1, 1973.

On February 27, 1973 the National Highway Traffic Safety Administration proposed (38 F.R. 5261) that paragraph S4.3 of 49 CFR 571.101, *Control location, identification, and illumination* be amended to allow vehicle manufacturers the option of providing an instrument illumination control with either an "off" position, or one providing illumination "barely discernible to a vehicle operator whose eyes have adapted to dark ambient roadway conditions." The standard mandated an "off" position only as of September 1, 1973 and the agency's notice of February 27 granted the petition of Mercedes-Benz of North America for initiation of rulemaking to allow the option. Mercedes justified its request with its opinion that "under no circumstances should the driver . . . be without a certain amount of control illumination, and . . . a driver who is unfamiliar with (a) vehicle 'cannot possibly recognize the identification of the specified controls upon activating the head lamps switch when the rheostat has been turned off'".

The comments received supported the proposal. Some reservations were expressed over the subjectivity of the proposed wording. The NHTSA recognized this problem in the notice when it commented "While this option does not provide

a quantitative performance level per se, it is assumed that 'barely discernible' illumination would be of such low intensity that it does not produce glare on the instrument panel or a reflection in the windshield". However, no one suggested language more objective in nature, and the NHTSA has decided to adopt its proposed wording in the absence of a quantitative expression of light output. The NHTSA may conduct research that possibly could lead to further rule making in this area.

In consideration of the foregoing, the last sentence of paragraph S4.3 of 49 CFR 571.101, Motor Vehicle Safety Standard No. 101, is revised . . . .

*Effective date:* September 1, 1973. Because the amendment is of a requirement effective September 1, 1973, and allows an optional means of compliance, it is found for good cause shown that an effective date earlier than 180 days after issuance is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51).

Issued on August 9, 1973.

James B. Gregory  
Administrator

**38 F.R. 22125**  
**August 16, 1973**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 101

### Control Location, Identification and Illumination

(Docket No. 1-18; Notice 11)

This notice amends 49 CFR 571.101, Standard No. 101, *Control Location, Identification and Illumination*, to permit the identification of certain controls with symbols designated by the International Standards Organization (I.S.O.).

On September 27, 1973, the NHTSA proposed (38 F.R. 26940) (Docket No. 1-18; Notice 10) to amend Standard No. 101 to permit the identification of certain controls with symbols slightly different from those currently permitted. Several, though not all, of the proposed symbols were I.S.O. symbols. Comments on the proposal were generally favorable, although most of the vehicle manufacturers favored the outright adoption of I.S.O. symbols. The NHTSA has concluded that the cost savings inherent in an internationally uniform symbol scheme are significant, and that the I.S.O. symbols should be adopted.

The final form of the I.S.O. symbols was not decided upon until several months after the proposal was issued, so the I.S.O. symbols for headlamps, taillamps, clearance lamps, and the windshield wiping system differ slightly from those printed in Notice 10. Because of the general agreement on the desirability of the I.S.O. symbols, and the need to give definitive guidance to manufacturers, this agency has concluded that further notice and opportunity to comment are unnecessary and not in the public interest.

To facilitate an orderly changeover to the I.S.O. symbols, the present amendment, effective immediately, allows manufacturers at their option to use either the symbols specified up to now in Standard No. 101 or newly-specified I.S.O. symbols. The NHTSA plans to issue a further proposal within the next year to make the I.S.O. symbols mandatory, including new symbols for the heating and/or air conditioning fan and a combined windshield wiper and washer.

In consideration of the foregoing, 49 CFR 571.101, Standard No. 101, is amended. . . .

*Effective date:* July 29, 1975. Because the amendment allows an optional means of compliance, the NHTSA finds, for good cause shown, that an immediate effective date is in the public interest.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on July 23, 1975.

James B. Gregory  
Administrator

40 F.R. 31770  
July 29, 1975



## MOTOR VEHICLE SAFETY STANDARD NO. 101

### Control Location, Identification and Illumination—Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses

(Docket No. 1-18)

**S1. Scope.** This standard specifies requirements for the location, identification, and illumination of motor vehicle controls.

**S2. Purpose.** The purpose of this standard is to insure the accessibility of motor vehicle controls and to facilitate their selection under daylight and nighttime conditions, in order to reduce the hazards caused by the diversion of the driver's attention from the motoring environment.

**S3. Application.** This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses.

**S4. Requirements.** Each passenger car, multipurpose passenger vehicle, truck, and bus manufactured with any control listed in S4.1 or Column 1 of Table 1, shall meet the requirements of this standard for the location, identification, and illumination of such control.

**S4.1 Control location.** This section applies to each passenger car manufactured on or after January 1, 1972, and to each multipurpose passenger vehicle, truck, and bus manufactured on or after September 1, 1972. Each of the following controls shall be operable, under the conditions of S5, by a person seated at the controls:

- (a) Steering wheel.
- (b) Horn control.
- (c) Transmission shift lever, except transfer case.
- (d) Ignition switch.
- (e) Headlamp switch.
- (f) Turn signal control.
- (g) Illumination intensity control.
- (h) Windshield wiper control.
- (i) Windshield washer control.
- (j) Manual choke.
- (k) Driver's sun visor.

**S4.2 Control identification.** [This section applies to each passenger car manufactured on or after January 1, 1972, and to each multipurpose passenger vehicle, truck, and bus manufactured on or after September 1, 1972.

**S4.2.1** [If any control listed in Column 1 of Table 1 is manually operated, the control shall be identified by the word or abbreviation specified in Column 2. A control may, in addition, be identified by a symbol, but only a symbol shown in Column 3 or Column 4 shall be used. However, if the word "None" appears in Column 3, no symbol shall be provided. Identification shall be placed on or adjacent to the control, visible to the vehicle operator, and shall appear to the operator in an upright position. (40 F.R. 31770—July 29, 1975. Effective: 7/29/75)]

**S4.2.2** Identification shall be provided for each function of any automatic vehicle speed system control and any heating and air conditioning system control, and for the extreme positions of any such control that regulates a function over a quantitative range.

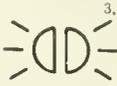
**Example 1:** A slide lever controls the temperature of the air in the vehicle heating system over a continuous range, from no heat to maximum heat. Since the control regulates a single function over a quantitative range, only the extreme positions require identification.

**Example 2:** A switch has three positions, for heat, defrost, and air conditioning. Since each position regulates a different function, each position must be identified. (36 F.R. 23067 — December 3, 1971. Effective: 1/1/72)]

**54.3 Control illumination.** [This section applies to each passenger car, and to each multi-purpose passenger vehicle, truck, and bus with a GVWR of 10,000 pounds or less manufactured on or after September 1, 1972, and to each multi-purpose passenger vehicle, truck, and bus with a GVWR of more than 10,000 pounds manufactured on or after March 1, 1973. Except for foot-operated controls or manually operated controls mounted upon the steering column, the identification of any control listed in Column 1 of Table 1 and accompanied by the word "yes" in the corresponding space in Column 5 shall be

illuminated whenever the headlamps are activated. Control identification need not be illuminated when the headlamps are being flashed. Control identification for a heating and air-conditioning system need not be illuminated if the system does not direct air directly upon the windshield. On each vehicle to which this paragraph applies manufactured on or after September 1, 1973, a control shall be provided to adjust the intensity of control illumination, so that it is continuously variable from a position of either no illumination, or illumination that is barely discernible to a vehicle operator

TABLE 1—Control Identification and Illumination

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5
Motor Vehicle Equipment Control	Word or Abbreviation	Permissible Symbol	Alternate Permissible Symbol	Illumination
Engine Start	Engine Start <sup>1</sup>	None	None	
Engine Stop	Engine Stop <sup>1</sup>	None	None	Yes <sup>1</sup>
Manual Choke	Choke	None	None	
Hand Throttle	Throttle	None	None	
Automatic Vehicle Speed Control		None	None	Yes
Headlamps and Taillamps	Lights <sup>2</sup>		 <sup>2,4</sup>	
Vehicular Hazard Warning Signal	Hazard		 <sup>4</sup>	Yes
Clearance Lamps	Clearance Lamps <sup>3</sup> or CL LPS		 <sup>3,4</sup>	Yes
Identification Lamps	Identification Lamps or ID LPS	None	None	Yes
Windshield Wiping System	Wiper or Wipe			Yes
Windshield Washing System	Washer or Wash			Yes
Windshield Defrosting and Defogging System	Defrost or Def	None	None	Yes
Heating and Air Conditioning System		None	None	Yes

<sup>1</sup> Use when engine control is separate from the key locking system.

<sup>2</sup> Use also when clearance, identification lamps and/or side marker lamps are controlled with the headlamp switch.

<sup>3</sup> Use also when clearance lamps, identification lamps and/or side marker lamps are controlled with one switch other than the headlamp switch.

<sup>4</sup> Framed areas may be filled.

whose eyes have adapted to dark ambient roadway conditions, to a position providing illumination sufficient for the vehicle operator to readily identify the control under conditions of reduced visibility. (38 F.R. 22125—August 16, 1973. Effective: 9/1/73)】

**S5. Conditions.**

**S5.1** 【Except as provided in S5.2, the person seated at the controls is restrained by a non-extending pelvic restraint fastened so that there is no slack between the lap belt and the pelvis.

**S5.2** The person seated at the controls of a passenger car (except for a convertible passen-

ger car), and of any multipurpose passenger vehicle, truck, or bus required by Motor Vehicle Safety Standard No. 208 to have a Type 2 seat belt assembly installed at the driver's seating position, is restrained by non-extending upper torso and pelvic restraints fastened so that the upper torso restraint can be moved 4 inches away from the sternum and there is no slack between the lap belt and the pelvis. (36 F.R. 23067—December 3, 1971. Effective: 1/1/72)】

**36 F.R. 503**  
**January 14, 1971**



## MOTOR VEHICLE SAFETY STANDARD NO. 102

### Transmission Shift Lever Sequence, Starter Interlock, and Transmission Braking Effect— Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses

**S1. Purpose and scope.** This standard specifies the requirements for the transmission shift lever sequence, a starter interlock, and for a braking effect of automatic transmissions, to reduce the likelihood of shifting errors, starter engagement with vehicle in drive position, and to provide supplemental braking at speeds below 25 miles per hour.

**S2. Application.** This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses.

#### **S3. Requirements.**

##### **S3.1 Automatic transmissions.**

**S3.1.1 Location of transmission shift lever positions on passenger cars.** A neutral position shall be located between forward drive and reverse drive positions. If a steering-column-mounted transmission shift lever is used, movement from neutral position to forward drive position shall be clockwise. If the transmission shift lever sequence includes a park position, it shall be lo-

cated at the end, adjacent to the reverse drive position.

**S3.1.2 Transmission braking effect.** In vehicles having more than one forward transmission gear ratio, one forward drive position shall provide a greater degree of engine braking than the highest speed transmission ratio at vehicle speeds below 25 miles per hour.

**S3.1.3 Starter interlock.** The engine starter shall be inoperative when the transmission shift lever is in a forward or reverse drive position.

**S3.2 Automatic and manual transmissions.** Identification of shift lever positions of automatic transmissions and of the shift lever pattern of manual transmissions, except three forward speed manual transmissions having the standard "H" pattern, shall be permanently displayed in view of the driver.

**32 F.R. 2410**  
**February 3, 1967**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 103

### Windshield Defrosting and Defogging Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses

(Docket Nos. 9, 1–12)

Motor Vehicle Safety Standard No. 103 (32 F.R. 2410) requires that each passenger car and multipurpose passenger vehicle manufactured for sale in the Continental United States be provided with a windshield defrosting and defogging system. A proposal to amend section 371.21 of Part 271, Federal Motor Vehicle Safety Standards, by amending Standard No. 103, was published in the *Federal Register* on December 28, 1967 (32 F.R. 20867).

Interested persons have been afforded an opportunity to participate in the making of the amendment. Their comments, as well as other available information, have been carefully considered.

The purpose of the amendment is to increase driver visibility, and thereby enhance safe vehicle performance, by (1) adding test conditions and performance requirements for passenger car defrosting and defogging systems; and (2) broadening the standard's application to cover trucks and buses, which were not subject to the initial standard. In addition, the standard was modified to improve its clarity.

Paragraph S4.3 in the notice of proposed rulemaking required testing of passenger car windshield defrosting and defogging systems in accordance with the test conditions specified in paragraph 4 of SAE Recommended Practice J902, August 1964. Several comments asked that this requirement be modified to permit optional use of the test conditions set out in paragraph 4 of SAE Recommended Practice J902a, March 1967, a revised version of the Recommended Practice. The Administrator has determined that there are only minor differences between the test equipment, instrumentation, conditions and procedures in paragraphs 4.1 through 4.4.7 of these

two versions, and that these minor differences do not affect the level of safety attained with the use of either one. Accordingly, S4.3 of the notice has been changed to permit the use of the demonstration procedures described in paragraphs 4.1 through 4.4.7 of either SAE Recommended Practice J902 or SAE Recommended Practice J902a.

Another feature of paragraph S4.3 which evoked comments was its provision for use of the test procedures in section 4 of Recommended Practice J902 to the extent they are "applicable to" the particular system being tested. Any possible ambiguity that might appear upon superficial examination of the quoted words disappears when this requirement is read in conjunction with the operative provisions of section 4 of the SAE Recommended Practices. Section 4 makes reference to certain components that are not incorporated in every passenger car (e.g. defroster blowers). The use of the section 4 test procedures is restricted to those procedures "applicable to" the particular passenger car system being tested to make it clear that procedures which, by their terms, apply to components that are not a part of the car being tested need not be complied with.

Three comments asked that paragraph S4.2 of the standard be changed to permit optional use of the defrosted area and defrosting time requirements prescribed in section 3 of SAE Recommended Practice J902a in lieu of those set forth in section 3 of Recommended Practice J902. In the notice of proposed rulemaking, paragraph S4.2 incorporated, with minor modifications, the defrosted area and defrosting time requirements of Recommended Practice J902. Comparison of the two versions of the SAE Recommended Practice reveals that there are great differences between the areas and times

prescribed by J902 and those prescribed by J902a. The requests for a change in paragraph S4.2 acknowledged that compliance with one procedure is not necessarily more difficult than compliance with the other. The submissions did not indicate that adherence to the J902 requirements would impose any significant burden or would be impracticable in any sense. In view of the absence of sufficient substantiation to justify changing the standard, paragraph S4.2 has not been modified to allow alternative defrosted area and defrosting time requirements.

One comment requested that the standard be changed to allow 5 minutes more to meet the defrosted area requirements of the critical or "C" area. It was said that reasonable performance tolerances should be taken into account, and that, therefore, the requirement of paragraph 3.1 of SAE Recommended Practice J902, as adopted in modified form in paragraph S4.2 of the standard, that the "C" area must be 80 percent defrosted after 20 minutes of operation should be changed to allow manufacturers 25 minutes to attain the 80 percent defrosted goal. Such a modification would permit a significant reduction of the defrosting performance of defrosting and defogging systems and this, in turn, would be contrary to the interest of safety. While it is true that variations in such things as the performance of the thermostat and the outlet nozzle will affect the system's capability to defrost a given windshield area within a stated time, there

is no apparent reason why it is impracticable to design and construct the system so that, at a minimum performance level, it will comply with the requirements of paragraph S4.2. For these reasons, the Administrator has rejected this request for modification of the standard.

Many comments submitted suggestions that went beyond the scope of the notice. For example, submissions that discussed the problems of establishing performance requirements for defrosting and defogging systems on multipurpose passenger vehicles, trucks, and buses were received. These, and other comments of this nature, will be considered in connection with future rulemaking action.

In consideration of the foregoing, § 371.21 of Part 371, Federal Motor Vehicle Safety Standards, is amended, effective January 1, 1969, by amending Motor Vehicle Safety Standard No. 103 . . . .

This amendment is made under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority of April 24, 1968.

Issued in Washington, D. C. on April 24, 1968.

Lowell K. Bridwell,  
Federal Highway Administrator.

**33 F.R. 6468**  
**April 27, 1968**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 103  
Windshield Defrosting and Defogging Systems**

(Docket No. 73-6; Notice 2)

The purpose of this notice is to amend Motor Vehicle Safety Standard No. 103, *Windshield Defrosting and Defogging Systems*, to revise the wind test condition.

On March 20, 1973, the National Highway Traffic Safety Administration published a notice (38 F.R. 7339) proposing a change in the standard's wind velocity test condition which would clarify the NHTSA's intent that the performance requirements be met at all levels within the specified wind speed range. The present provision specifying that "the wind velocity may not exceed 5 mph" may be interpreted by manufacturers as requiring compliance at only one point within the range. Such an interpretation could result in enforcement problems if the NHTSA discovered a failure to comply when testing a vehicle at one point within the range while the manufacturer had attained compliance during testing at another point within the specified wind speed range. Perpetuation of this type of enforcement situation might retard the development of complying vehicle systems and undermine the level of performance the NHTSA intends to accomplish. Therefore, the NHTSA proposed in its March 20, 1973, notice that the standard specify that the wind velocity test condition be at any level from 0 to 2 mph. Reading this requirement together with the interpretive provisions of § 571.4, the vehicle would be required to be capable of complying with the standard when the wind velocity is at any speed within that range. This would prevent any discrepancy between the manufacturers' and the NHTSA's conception of what the standard actually requires.

Several comments submitted in response to the proposal to revise the wind speed test condition asserted that wind speeds cannot be accurately measured below 2 mph, and therefore the requirement should remain unchanged. This objection lacks merit, since the standard only requires that a vehicle be *capable* of complying with the standard at wind speeds from 0 to 2 mph. A manufacturer may generally conduct his testing at higher wind speeds to determine compliance, since the greater the wind speed, the more difficult it is to defrost the windshield within the specified time span.

The March 20, 1973, notice also proposed that the test chamber temperature sensor be located in a position not substantially affected by the heat from the engine. Comments from Ford and General Motors, submitted in response to this aspect of the proposal, objected to the proposed temperature location as unobjective and ambiguous and suggested establishment of a more specific location. The NHTSA is in tentative agreement with commenters' suggestion and is proposing in a separate notice issued today an exact location for the temperature sensor.

In consideration of the foregoing, in S4.3 of 49 CFR § 571.103, Motor Vehicle Safety Standard No. 103, paragraph (g) is amended. . . .

*Effective date:* September 1, 1975.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on March 17, 1975.

James B. Gregory  
Administrator

**40 F.R. 12991  
March 24, 1975**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 103

### Windshield Defrosting and Defogging Systems

(Docket No. 73-6; Notice 4)

The purpose of this notice is to amend Motor Vehicle Safety Standard No. 103, *Windshield Defrosting and Defogging Systems*, 49 CFR 571.103, to specify a relocation of the test chamber temperature and wind velocity sensors.

On March 24, 1975, the National Highway Traffic Safety Administration published a notice (40 F.R. 13002) proposing a change in the location of the test chamber temperature and wind velocity sensors to a position where they would not be affected by air released from vehicle engines during testing. A petition from Jaguar Cars Division of British Leyland UK Limited, describing compliance problems for vehicles that direct engine heat at the windshield as part of the defrosting process, prompted the rulemaking action.

It was proposed that the temperature and wind sensors be positioned at the forwardmost point of the vehicle or 36 inches from the base of the windshield, whichever is farther forward, at a level halfway between top and bottom of the windshield. At this location, the NHTSA concluded that the temperature measurement would not be affected by expelled engine heat and the wind measurement would not be affected by air released from hood ducts.

Comments to the proposal were received from Chrysler, Jaguar, and General Motors. Both Chrysler and General Motors supported adoption of the amendment.

Jaguar took issue with the proposed thermocouple location and asked that the sensors be placed 3 feet forward of the vehicle. The NHTSA denies this request, having found that the proposed thermocouple position provides for reliable and objective temperature and wind velocity measurements. Location of the sensors at the position suggested by Jaguar is therefore unnecessary and would tend to penalize those manufacturers using short cold chambers for compliance testing. The purpose of the amendment is to relocate the temperature and wind sensors to locations where they will not be affected by air released from vehicle engines. The agency concludes that the proposed location accomplishes this goal and should therefore be adopted.

In consideration of the foregoing, Standard No. 103 (49 CFR 571.103) is amended by adding in S4.3 a new paragraph (b) . . .

*Effective date:* September 1, 1975.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on July 28, 1975.

James B. Gregory  
Administrator

**40 F.R. 32336**  
**August 1, 1975**



## MOTOR VEHICLE SAFETY STANDARD NO. 103

### Windshield Defrosting and Defogging Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses

**51. Scope.** This standard specifies requirements for windshield defrosting and defogging systems.

**52. Application.** This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses, manufactured for sale in the Continental United States.

**53. Definitions.** "Road load" means the power output required to move a given motor vehicle at curb weight plus 400 pounds on level, clean, dry, smooth Portland cement concrete pavement (or other surface with equivalent coefficient of surface friction) at a specified speed through still air at 68°F and standard barometric pressure (29.92" of Hg.) and includes driveline friction, rolling friction, and air resistance.

#### 54. Requirements.

**54.1** Each vehicle shall have a windshield defrosting and defogging system.

**54.2** Each passenger car windshield defrosting and defogging system shall meet the requirements of section 3 of SAE Recommended Practice J902, "Passenger Car Windshield Defrosting Systems," August 1964, when tested in accordance with 54.3, except that "the critical area" specified in paragraph 3.1 of SAE Recommended Practice J902 shall be that established as Area C in accordance with Motor Vehicle Safety Standard No. 104, "Windshield Wiping and Washing Systems," and "the entire windshield" specified in paragraph 3.3 of SAE Recommended Practice J902 shall be that established as Area A in accordance with Motor Vehicle Safety Standard No. 104.

**54.3 Demonstration procedure.** The passenger car windshield defrosting and defogging system shall be tested in accordance with the portions of paragraphs 4.1 through 4.4.7 of SAE Recom-

mended Practice J902, August 1964, or SAE Recommended Practice J902a, March 1967, applicable to that system, except that—

(a) During the first five minutes of the test, the engine speed or speeds may be those which the manufacturer recommends as the warm-up procedure for cold weather starting;

(b) During the last 35 minutes of the test period (or the entire test period if the five-minute warm-up procedure is not used), either—

(i) The engine speed shall not exceed 1500 rpm in neutral gear; or

(ii) The engine speed and load shall not exceed the speed and load at 25 mph in the manufacturer's recommended gear with road load;

(c) A room air change of 90 times per hour is not required;

(d) The windshield wipers may be used during the test if they are operated without manual assist;

(e) One or two windows may be open a total of one inch;

(f) The defroster blower may be turned on at any time; and

(g) [The wind velocity is at any level from 0 to 2 mph. (40 F.R. 12991—March 24, 1975. Effective: 9/1/75)]

[(h) The test chamber temperature and the wind velocity shall be measured, after the engine has been started, at the forwardmost point of the vehicle or a point 36 inches from the base of the windshield, whichever is farther forward, at a level halfway between the top and bottom of the windshield on the vehicle centerline. (40 F.R. 32336—August 1, 1975. Effective: 9/1/75)]

33 F.R. 6469  
April 27, 1968



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 104

### Windshield Wiping and Washing Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses

(Docket No. 7)

Motor Vehicle Safety Standard No. 104 (32 F.R. 2410) specifies requirements for windshield wiping and washing systems for passenger cars 68 or more inches in overall width. A proposal to amend section 371.21 of Part 371, Federal Motor Vehicle Safety Standards, by amending Standard No. 104 was published in the *Federal Register* on December 28, 1967 (32 F.R. 20867).

Interested persons have been afforded an opportunity to participate in the making of the amendment. Their comments, as well as other available information, have been carefully considered.

The primary purpose of the amendment is to broaden the application of the Initial Standard to cover smaller passenger cars, multipurpose passenger vehicles, trucks, and buses. The wiped-area performance requirements have been extended to cars smaller than 68 inches wide, and tables which prescribe the minimum size of wiped areas have been added for such cars. The overall effect is that the wiper systems of various passenger cars must wipe areas to provide approximately equivalent driver vision. The wiper frequency requirement, modified to prescribe that the highest and lowest frequencies must differ by at least 15 cycles per minute, has been extended to multipurpose passenger vehicles, trucks, and buses. A requirement for a windshield washing system has also been extended to smaller cars, multipurpose passenger vehicles, trucks, and buses. Other modifications to the standard were made in order to improve its clarity.

The material received in response to the notice of proposed rulemaking evinced almost universal acknowledgement that broadening of the coverage of the standard would improve overall driver visibility and thus contribute to safety on the highways. With a few minor exceptions, dis-

cussed below, there was no suggestion that manufacturers would have any difficulty in complying with the revised requirements by the January 1, 1969, effective date.

Some of the comments indicated some misunderstanding of the reference to SAE Recommended Practice J903a, "Passenger Car Windshield Wiper Systems," May 1966, in paragraph S4.1.2 of the standard. Paragraph S4.1.2 is part of the wiped area requirement and it provides, among other things, for testing "in accordance with" SAE Recommended Practice J903a. This does not mean that all of section 4, "Test Methods," of SAE Recommended Practice J903a is incorporated by reference into the wiped area requirements of the standard. The reference to the SAE Recommended Practice relates only to its procedure for testing wiper systems for compliance with wiped area requirements. Therefore, the ozone test, wiper system stall test, 1,500,000-cycle durability test, and other details of section 4 of SAE Recommended Practice J903a are not included in the scope of Standard No. 104.

Several comments asked that the standard contain a demonstration procedure for testing windshield wiper systems for compliance with the 45-cycle-per-minute frequency requirement and the 15-cycle-per-minute frequency differential requirement. Apparently, these persons were concerned that the ability of systems to meet both requirements might be judged under abnormal conditions rather than under those encountered in normal driving. Considering these requests reasonable, the Administrator has provided that windshield wiper systems will be deemed to have met the frequency differential requirements of the standard (sections S4.1.2 and S4.1.1.3) if they meet those requirements when tested in accor-

dance with sections 4.1.1 and 4.1.2 of SAE Recommended Practice J903a.

One comment requested clarification of the location of the plan view reference line in the "eyellipse." The "eyellipse" is the "95 percent eye range contour" specified in SAE Recommended Practice J941, "Passenger Car Driver's Eye Range," November 1965. The author of this comment pointed out that Figure 2 in Recommended Practice J903a incorrectly shows the plan view reference line as located through the geometric center of the 95 percent eye range contour. The drawings referred to in Recommended Practice J941 show the "eyellipse" centerline as dissecting the left ellipse of the two intersecting ellipses in the plan view. In paragraph S3 of the standard, the definition of the "95 percent eye range contour" makes reference to SAE Recommended Practice J941, which correctly positions the plan view reference line in the left-hand ellipse of the "eyellipse." Accordingly, the Administrator has determined that subparagraph (a) of the definition of "plan view reference line" in paragraph S3 of the standard correctly reflects this position as defined, but subparagraph (b) of the same definition has been modified to clarify the location of the "eyellipse." Subparagraph (b), as revised by this amendment, places the plan view reference line outboard of the longitudinal centerline of the driver's designated seating position, thus locating the "eyellipse" itself geometrically in the center of the seat.

In the notice of proposed rulemaking, paragraph S4.2 required a windshield washing system meeting the requirements of SAE Recommended Practice J942, "Passenger Car Windshield Washer Systems," November 1965. Section 3.1 of that Recommended Practice sets washer system capability requirements by reference to the passenger car wiped area requirements of SAE Recommended Practice J903. Several comments pointed this out and requested modification of the standard in view of the fact that the wiped area requirements of the standard are different from those of Recommended Practice J903. In addition, some comments sought revision of this particular provision on the ground that the wiped areas of Recommended Practice J903 were created for passenger cars, while the washer provisions

of the standard apply to multipurpose passenger vehicles, trucks, and buses as well. In view of these comments, the Administrator has deleted the cross-reference, and S4.2 of the standard has been modified. The passenger car wiped-area requirement is now defined as that established under paragraph S4.1.2.1 of the standard; the wiped area for multipurpose passenger vehicles, trucks, and buses is now defined as the wiped area pattern designed by the manufacturer for the windshield wiping system on the exterior of the windshield glazing.

One comment sought a change in the wiper frequency differential requirement from 15 cycles per minute to 10 cycles per minute, claiming that production tolerances did not permit exact compliance with the 15-cycle-per-minute differential requirement. The comment did not indicate why, assuming a 5-cycle-per-minute tolerance is needed, the system could not be constructed to operate in the frequency differential range of between 15 and 20 cycles per minute rather than a 10-15 cycle range. The standard, like all standards, is a minimum one, and nothing in it prohibits a higher standard of performance than the one specified as minimal. For these reasons, and because the deviation requested would, if granted, lower the safety performance of this segment of the standard, the request has been denied.

Similarly, the Administrator has denied a request for deletion of the requirement that windshield washing systems must, when tested, deliver approximately 15 cc. of fluid to the windshield glazing surface. The requirement is embodied in section 2.11 of SAE Recommended Practice J942, which is incorporated by reference in paragraph 4.2 of the standard. The amount of fluid placed on the windshield's exterior is a central performance characteristic of a washing system, and a decrease in the required amount would clearly diminish the capability of the system to promote safety. Neither the comments in general nor any other known data indicate that the requirement incorporated in the standard is unfeasible. The one comment that sought a change in this aspect of the standard contained no detail demonstrating that systems in current production would be unable to meet the requirement by the effective date of the amendment. Consequently, the Administrator has decided not to deviate

from the adoption of section 2.11 of Recommended Practice J942, as announced in the notice of proposed rulemaking.

Several comments pointed out the difficulties involved in prescribing wiped-area requirements for multipurpose passenger vehicles, trucks, and buses. The Administrator is cognizant of the problems that arise because of the wide variety of windshield sizes and configurations as well as the differing relationships between the drivers' positions and the windshields in these vehicles. Owing to these factors, he has concluded that it is not possible to prescribe uniform wiped areas for the wiper systems of these vehicles generally or for vehicles within any generic type at this time. Hence, the standard's minimum wiped-area requirements apply only to passenger cars. The possibility of prescribing such requirements for other vehicular types will continue to be studied.

In addition, the Administration will also study the question of whether there should be standards applicable to so-called "hidden" windshield wipers

to insure their operability under snow and ice conditions. Although a number of comments sought the inclusion of such a provision in this standard, it was deemed inadvisable to do so in view of the absence of any such provision from the notice of proposed rulemaking.

In consideration of the foregoing, § 371.21 of Part 371, Federal Motor Vehicle Safety Standards, is amended effective January 1, 1969, by amending Motor Vehicle Safety Standard No. 104 . . . .

This amendment is made under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority of April 24, 1968.

Issued in Washington, D.C., on April 24, 1968.

Lowell K. Bridwell  
Federal Highway Administrator.

33 F.R. 6466  
April 27, 1968



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 104

### Windshield Wiping and Washing Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses

(Docket No. 7)

An amendment to Motor Vehicle Standard No. 104, which specifies requirements for windshield wiping and washing systems in passenger cars, multipurpose passenger vehicles, trucks, and buses, was issued on April 24, 1968 (33 F.R. 6466). The amendment is effective January 1, 1969.

Paragraph S3 of the amended standard, entitled "Definitions," contains a definition of the "plan view reference line" which, as it applies to vehicles with individual-type seats, locates the line parallel to the vehicle's longitudinal centerline so that the 95 percent eye range contour, or eyellipse, is geometrically positioned around the longitudinal centerline of the driver's designated seating position.

The purpose of the definition, as stated in the preamble to the standard, was to position the eyellipse geometrically in the center of the seat. The Administrator has determined that the definition may be construed to permit a different location of the eyellipse, since it provides that the 95 percent eye range contour must be geometrically positioned "around" the longitudinal centerline of the driver's seat. Therefore, the definition is being amended to clarify the location of the eyellipse by requiring its geometric center to be positioned on the longitudinal centerline of the driver's designated seating position.

Several petitions for reconsideration of the amendment have raised the possibility that the definition of plan view reference line may impose an unintended hardship on manufacturers of smaller cars. The effect of the definition is to relocate the eyellipse slightly outboard of the location prescribed in the standard prior to the amendment. This change may make it impracticable for manufacturers of smaller cars to com-

ply with the wiped-area requirements of the standard. Therefore, the definition is being further amended to permit optional positioning of the eyellipse on the plan view reference line in the manner prescribed in the standard prior to the previous amendment.

Neither of these revisions appreciably alters the amount of the windshield surface which wiping systems must wipe under the standard. Hence the amendments will have no adverse effect on motor vehicle safety.

Paragraph S4.1.1.3 of the amendment provides, in part, that the lowest frequency or speed of windshield wiping systems must be at least 20 cycles per minute regardless of engine speed and engine load. The Administrator has received petitions asking that a frequency or speed lower than 20 cycles per minute be allowed. The petitioners state that such a lower frequency or speed will be useful under conditions of very light precipitation or wheel spray, and that retention of the 20-cycle-per-minute minimum will preclude the use of so-called "intermittent" windshield wiping systems. The Administrator has concluded that the standard should be amended to allow manufacturers to use systems which can operate at a frequency or speed of less than 20 cycles per minute so long as the driver of the vehicle has available a system capable of operating at at least two other frequencies or speeds, differing by at least 15 cycles per minute, the lower of which is at least 20 cycles per minute. The net effect of this change is to allow as many different frequencies or speeds as the manufacturer desires as long as at least two of these speeds or frequencies meet the specified requirements.

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Since these amendments provide clarification, relieve a hardship and impose no additional burden on any person, notice and public procedure thereon are unnecessary.

In consideration of the foregoing, § 371.21 of Part 371, Federal Motor Vehicle Safety Standards, Motor Vehicle Safety Standard No. 104 (32 F.R. 2410), as amended (33 F.R. 6466), is amended, effective July 31, 1968. . . .

It is found, for good cause shown, that an effective date sooner than 180 days after the issuance of these amendments is in the public interest.

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(Secs. 103, 119, National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1470); delegation of authority of April 24, 1968 (33 F.R. 6538)).

Issued in Washington, D.C., on July 31, 1968.

Lowell K. Bridwell,  
Federal Highway Administrator.

**33 F.R. 11117**  
**August 6, 1968**

## MOTOR VEHICLE SAFETY STANDARD NO. 104

### Windshield Wiping and Washing Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses

**S1. Scope.** This standard specifies requirements for windshield wiping and washing systems.

**S2. Application.** This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses.

**S3. Definitions.** The term "seating reference point" is substituted for the terms "manikin H point" and "H point" wherever either of those terms appears in any SAE Standard or SAE Recommended Practice referred to in this standard.

"Daylight opening" means the maximum unobstructed opening through the glazing surface, as defined in paragraph 2.3.12 of section E, Ground Vehicle Practice, SAE Aerospace-Automotive Drawing Standards, September 1963.

"Glazing surface reference line" means the line resulting from the intersection of the glazing surface and a horizontal plane 25 inches above the seating reference point, as shown in Figure 1 of SAE Recommended Practice J903a, "Passenger Car Windshield Wiper Systems," May 1966.

"Overall width" means the maximum overall body width dimension "W116," as defined in section E, Ground Vehicle Practice, SAE Aerospace-Automotive Drawing Standards, September 1963.

"Plan view reference line" means—

(a) For vehicles with bench-type seats, a line parallel to the vehicle longitudinal centerline outboard of the steering wheel centerline 0.15 times the difference between one-half of the shoulder room dimension and the steering wheel centerline-to-car-centerline dimension as shown in Figure 2 of SAE Recommended Practice J903a, May 1966; or

[(b) For vehicles with individual-type seats, either—

(i) A line parallel to the vehicle longitudinal centerline which passes through the center of the driver's designated seating position; or

(ii) A line parallel to the vehicle longitudinal centerline located so that the geometric center of the 95 percent eye range contour is positioned on the longitudinal centerline of the driver's designated seating position. (33 F.R. 11117—Aug. 6, 1968)]

"Shoulder room dimension" means the front shoulder room dimension "W3" as defined in section E, Ground Vehicle Practice, SAE Aerospace-Automotive Drawing Standards, September 1963.

"95% eye range contour" means the 95th percentile tangential cutoff specified in SAE Recommended Practice J941, "Passenger Car Driver's Eye Range," November 1965.

#### S4. Requirements.

**S4.1 Windshield wiping system.** Each vehicle shall have a power-driven windshield wiping system that meets the requirements of S4.1.1.

##### S4.1.1 Frequency.

**S4.1.1.1** Each windshield wiping system shall have at least two frequencies or speeds.

**S4.1.1.2** One frequency or speed shall be at least 45 cycles per minute regardless of engine load and engine speed.

**S4.1.1.3** [Regardless of engine speed and engine load, the highest and one lower frequency or speed shall differ by at least 15 cycles per minute. Such lower frequency or speed shall be at least 20 cycles per minute regardless of engine speed and engine load. (33 F.R. 11117—Aug. 6, 1968)]

**S4.1.1.4** Compliance with subparagraphs S4.1.1.2 and S4.1.1.3 may be demonstrated by testing under the conditions specified in sections 4.1.1 and

4.1.2 of SAE Recommended Practice J903a, May 1966.

**54.1.2 Wiped area.** When tested wet in accordance with SAE Recommended Practice J903a, May 1966, each passenger car windshield wiping system shall wipe the percentage of Areas A, B, and C of the windshield (established in accordance with S4.1.2.1) that (1) is specified in column 2 of the applicable table following subparagraph S4.1.2.1; and (2) is within the area bounded by a perimeter line on the glazing surface one inch from the edge of the daylight opening.

**54.1.2.1** Areas A, B, and C shall be established as shown in Figures 1 and 2 of SAE Recommended Practice J903a, May 1966, using the angles specified in Columns 3 through 6 of Table I, II, III or IV, as applicable.

**54.2 Windshield washing system.**

**54.2.1** Each passenger car shall have a windshield washing system that meets the requirements of SAE Recommended Practice J942, "Passenger Car Windshield Washer Systems" November 1965, except that the reference to "the effective wipe pattern defined in SAE J903, paragraph 3.1.2" in paragraph 3.1 of SAE Recommended Practice J942 shall be deleted and "the areas established in accordance with subparagraph S4.1.2.1 of Motor Vehicle Safety Standard No. 104" shall be inserted in lieu thereof.

**54.2.2** Each multipurpose passenger vehicle, truck and bus shall have a windshield washing system that meets the requirements of SAE Recommended Practice J942, November 1965, except that the reference to "the effective wipe pattern defined in SAE J903, paragraph 3.1.2" in paragraph 3.1 of SAE Recommended Practice J942 shall be deleted and "the pattern design by the manufacturer for the windshield wiping system on the exterior surface of the windshield glazing" shall be inserted in lieu thereof.

**33 F.R. 6467**  
**April 27, 1968**

TABLE I. Passenger cars of less than 60 inches in overall width.

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5	COLUMN 6
AREA	MINIMUM PERCENT TO BE WIPED	ANGLES IN DEGREES			
		LEFT	RIGHT	UP	DOWN
A	80	16	49	7	5
B	94	13	46	4	3
C	99	7	15	3	1

TABLE II. Passenger cars of 60 or more but less than 64 inches in overall width.

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5	COLUMN 6
AREA	MINIMUM PERCENT TO BE WIPED	ANGLES IN DEGREES			
		LEFT	RIGHT	UP	DOWN
A	80	17	51	8	5
B	94	13	49	4	3
C	99	7	15	3	1

TABLE III. Passenger cars of 64 or more but less than 68 inches in overall width.

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5	COLUMN 6
AREA	MINIMUM PERCENT TO BE WIPED	ANGLES IN DEGREES			
		LEFT	RIGHT	UP	DOWN
A	80	17	53	9	5
B	94	14	51	5	3
C	99	8	15	4	1

TABLE IV. Passenger cars of 68 or more inches in overall width.

COLUMN 1	COLUMN 2	COLUMN 3	COLUMN 4	COLUMN 5	COLUMN 6
AREA	MINIMUM PERCENT TO BE WIPED	ANGLES IN DEGREES			
		LEFT	RIGHT	UP	DOWN
A	80	18	56	10	5
B	94	14	53	5	3
C	99	10	15	5	1

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 105**

**Hydraulic Service Brake, Emergency Brake, and Parking Brake  
Systems—Passenger Cars**

**(Docket No. 9)**

A proposal to amend § 371.21 of Part 371—Initial Federal Motor Vehicle Safety Standards, Motor Vehicle Safety Standard No. 105 (32 F.R. 2410) to include specified emergency system performance of the braking system on passenger cars was published in the *Federal Register* on February 3, 1967 (32 F.R. 2418).

Interested persons have been afforded an opportunity to participate in the making of the amendment. Two comments suggested increasing the average emergency brake deceleration rate from 6 fps<sup>2</sup> to 8 fps<sup>2</sup>. Another comment suggested adopting the 8.5 fps<sup>2</sup> deceleration rate of the proposed standards of the Economic Commission for Europe. Since these suggestions are beyond the scope of the notice of proposed rule making, they were not considered for this amendment. A higher deceleration rate was not proposed in the notice, because the National Traffic Safety Agency determined that a rate greater than that proposed would not be reasonable nor practicable for 1968 cars. One comment requested a change in the pedal pressure requirement of

SAE J843a as applied to the emergency braking system. Since the requirements and test procedures of SAE J843a (except for vehicle loading) do not apply to the emergency braking system when determining compliance with paragraph S4.2.1, there is no emergency braking system pedal pressure requirement. Therefore no changes have been made in the amendment.

This amendment is made under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority of March 31, 1967 (32 F.R. 5606), as amended April 6, 1967 (32 F.R. 6495), and becomes effective January 1, 1968.

Issued in Washington, D. C., on June 30, 1967.

Lowell K. Bridwell,  
Federal Highway Administrator.

**32 F.R. 10072  
July 8, 1967**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 105****Hydraulic Service Brake, Emergency Brake and Parking Brake Systems; Passenger Cars  
(Docket No. 70-5)**

On February 19, 1970, a proposal to amend section S4.1 of Motor Vehicle Safety Standard No. 105 was published in the *Federal Register* (35 F.R. 3177).

Under present S4.1 a service brake system, after exposure to water, must recover "within +20%, -40% of check stop pedal force by stop 15. (Based on the average of initial pedal force of the three check stops)." The option to recover "within +20%, -40% of check stop pedal force by stop 15 or within +20 lbs., -40% of check stop pedal force by stop 10" was proposed. Interested persons have been afforded an opportunity to comment. All comments favored the proposal; there were no objections.

It is therefore determined that the option will encourage the development of better balanced braking systems, thus reducing the tendency for early front or rear wheel lock up. For this reason, there is good cause for finding that an earlier effective date than 180 days after issuance of this amendment is in the public interest. Therefore, the amendment is effective May 23, 1970.

Issued on May 18, 1970.

Robert Brenner,  
Deputy Director,  
National Highway Safety Bureau.

**35 F.R. 7900**  
**May 22, 1970**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 105****Hydraulic Service Brake, Emergency Brake, and Parking Brake Systems****(Docket No. 70-27; Notice 15)**

This notice amends Standard No. 105-75, *Hydraulic brake systems*, 49 CFR 571.105-75, to delay its effective date 4 months from September 1, 1975, to January 1, 1976, and to establish interim control force values for water recovery testing. This notice also amends the present hydraulic brake system standard for passenger cars (Standard No. 105, *Hydraulic brake systems*, (49 CFR 571.105)) to permit compliance with that standard or the new standard at the option of the manufacturer until January 1, 1976.

As issued, Standard No. 105-75 applied to passenger cars, trucks, buses, and multipurpose passenger vehicles (MPV's) equipped with hydraulic brake systems. Its scheduled effective date was September 1, 1975. Thirteen petitions for rulemaking to postpone or revoke the standard were filed with the NHTSA earlier this year. Following a comprehensive evaluation of the petitions, NHTSA proposed and made final an indefinite delay of the standard as it applied to trucks, buses, and MPV's (40 F.R. 10493, March 6, 1975; 40 F.R. 18411, April 28, 1975).

At the same time, the agency denied petitions for substantial postponement or revocation of the standard as it applies to passenger cars, having considered the cost of compliance for those vehicles, and having determined that significant safety benefit will derive from better stopping performance, stability, and pedal force levels (40 F.R. 10483, March 6, 1975). A discussion of the potential benefits accompanied that decision. An economic evaluation of the impact of the standard will be available in the public docket. The only revisions of the standard proposed by the NHTSA were an interim pedal force value and

a 4-month delay of effective date, to permit some flexibility in new model introduction dates where technical changes or isolated compliance problems had not been resolved.

Manufacturer comments on the proposal were generally unresponsive to the proposed delay of four months and the interim pedal force value of 110 pounds in wet recovery stops. The Vehicle Equipment Safety Commission considered the proposed pedal force values to be overgenerous. Chrysler Corporation indicated its support for the 4-month delay and interim value but emphasized other arguments in its submission. General Motors requested that the pedal force value be made permanent. It appears that manufacturers support the short delay and pedal force modification to simplify introduction of the 1976 models. Accordingly, the standard is modified as proposed, to establish and amend effective date of January 1, 1976, and a pedal force increase of 60 pounds up to a total of 110 pounds (in S5.1.5.2) until September 1, 1976.

The majority of comments restated manufacturer positions on the issue of substantial delay or revocation of the standard for passenger cars. The NHTSA has already considered this issue and, as noted above, concluded that the benefits of improved stopping performance, stability, and pedal force values outweigh the costs of implementation. Manufacturers submitted no new data that would justify a reversal of the NHTSA's earlier decision.

Although the NHTSA limited its proposal to a choice between the effective dates of September 1, 1975, and January 1, 1976, several manufacturers compared the cost savings of a short delay to January 1, 1976, with a substantially longer

delay to September 1, 1976. Actually, the January 1 date was proposed in order to ease the introduction of new models after September 1, 1975, and was not proposed as a means of reducing costs. The proposal was largely in response to manufacturers' comments that some 1976 models would be introduced substantially later than normal so that 1975 model production might be extended beyond September 1, 1975. The NHTSA believes that the three years of lead-time since promulgation of Standard No. 105-75 have been sufficient to permit the design and testing of complying brake systems in nearly all cases. With the 4-month transitional period, a manufacturer will be free to introduce the new brake systems along with its new model introduction, as dictated by the economic situation of the automotive industry.

Ford and Chrysler suggested that the standard could be improved by reduced loading during brake fade testing. These companies argue that present-day brake balance must be modified to meet the brake-fade and fourth effectiveness test of Standard No. 105-75 and that the new balance is not optimum. Agency testing demonstrates that many present-day vehicles can in fact meet the requirements as their brakes are balanced and suggests that major departures from current brake

balance design will generally not be required to comply with fade requirements under the present test conditions. The NHTSA accordingly concludes that the presently-specified loading does not result in characteristics which would justify delay of the standard and the consequent loss of benefits during the period of delay.

In consideration of the foregoing Paragraph S4 of Standard No. 105 (49 CFR 571.105) is amended. . . .

*Effective date:* The date on which Standard No. 105-75 becomes mandatory for all passenger cars is January 1, 1976. However, the effective date of the amendments to both Standard No. 105-75 and Standard No. 105 is June 9, 1975, and passenger cars manufactured between that date and January 1, 1976, may conform to either standard at the discretion of the manufacturer.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on June 5, 1975.

James B. Gregory  
Administrator

40 F.R. 24525  
June 9, 1975

## MOTOR VEHICLE SAFETY STANDARD NO. 105

### Hydraulic Service Brake, Emergency Brake, and Parking Brake Systems—Passenger Cars

(Docket No. 9)

**S1. Purpose and scope.** This standard specifies requirements for hydraulic service brake, emergency brake, and parking brake systems intended to ensure adequate braking performance under normal and emergency conditions.

**S2. Application.** This standard applies to passenger cars.

**S3. Definitions.** "Pressure component" means any internal component of the brake master cylinder or master control unit, wheel brake cylinder, brake line, brake hose, or equivalent, except vacuum assist components.

**S4. Requirements.** [Each vehicle shall meet, at the option of the manufacturer, either the requirements of S4.1 through S4.3 of this standard, or the requirements of Standard No. 105-75 of this Part. (40 F.R. 24525—June 9, 1975. Effective: 6/9/75)]

**S4.1 Service brake system.** [The performance ability of the fully operational service brake system for passenger cars shall be not less than that described in Section D of Society of Automotive Engineers Recommended Practice J937, "Service Brake System Performance Requirements—Passenger Cars", June 1966, and tested in accordance with SAE Recommended Practice J843a, "Brake System Road Test Code—Passenger Cars", June 1966, except that the following is substituted for section (D)(7)(a) of SAE Recommended Practice J937:

"Brake to recover within +20%, -40% of check stop pedal force by stop 15 or within +20 lbs., -40% of check stop pedal force by stop 10. (Based on the average of initial pedal force of the three check stops)." (35 F.R. 7900—May 22, 1970. Effective: 5/23/70)]

**S4.2 Emergency brake system.** Rupture or leakage-type failure of any single pressure component of the service brake system, except structural failures of the brake master cylinder body or effectiveness indicator body, shall not result in complete loss of function of the vehicle brakes when force on the brake pedal is continued.

**S4.2.1 [Emergency system performance.** If failure of a pressure component or insufficient hydraulic fluid in the system causes loss of pressure in any part of the brake system, the remaining portion of the brake system shall provide a stop of the vehicle loaded in accordance with SAE Recommended Practice J843a, June 1966, from a speed of 60 mph, in not more than 646 feet, without pulling or swerving to the extent that would cause the vehicle to leave a level, 12-foot wide lane on a clean, dry, smooth, Portland cement concrete pavement (or other surface with equivalent coefficient of surface friction). (32 F.R. 10072—July 8, 1967)]

**S4.2.2 Emergency brake system effectiveness indication.** An electrically operated red light, mounted on the instrument panel in view of the driver, shall illuminate before or upon application of the brakes in the event of a hydraulic-type complete failure of a partial system. The indicator light shall have sufficient luminous intensity to be plainly visible in daylight and shall include a means for testing by the vehicle operator to ensure that the bulb is operable. No single failure in the internal components of the system effectiveness indicator, except the body of the device, shall permit the total loss of effectiveness of the braking system.

**S4.3 Parking brake system.** A parking brake system of a friction type with a solely mechanical means to retain engagement shall be provided that will hold the vehicle loaded in accordance with SAE Recommended Practice J843a, June 1966, to the limit of traction of the braked wheels in both forward and reverse directions on clean, dry, smooth, Portland cement concrete pavement (or other surface with equivalent coefficient of surface friction) of a 30 percent grade.

**[Interpretations**

(1) The definition of the term "emergency brake" contained in section 371.3(b) does not refer to a system that would provide a means of bringing a vehicle to a stop after a total failure of the entire hydraulic service brake system, since paragraph S4.2 of the Standard provides that rupture or leakage-type failure of any single pressure component of the service brake system, except structural failures of the

brake master cylinder body or effectiveness indicator body shall not result in complete loss of function of the vehicle brakes when force on the brake pedal is continued.

(2) Paragraph S4.2.1 applies to loss of pressure in a part of the brake system resulting from failure of a pressure component or insufficient hydraulic fluid in that part of the brake system.

(3) The requirement of paragraph S4.2.2 that an indicator light illuminate before or upon application of the brakes in the event of a hydraulic-type complete failure of a partial system may be met with a master cylinder reservoir level indicator light or system pressure indicator light. The indicator light need not illuminate during the application of brake pressure that contributed to the failure. (32 F.R. 3390—March 1, 1967).]

**32 F.R. 2410  
February 3, 1967**

## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 105a

### Hydraulic Brake Systems

(Docket No. 70-27; Notice 5)

This notice amends Part 571 of Title 49, Code of Federal Regulations, to add a new Motor Vehicle Safety Standard No. 105a (49 CFR § 571.105a) that establishes requirements for motor vehicle hydraulic brake systems and parking brake systems. A notice of proposed rule-making on this subject was published on November 11, 1970 (35 F.R. 17345).

Federal Standard No. 105, in effect since January 1, 1968, represents the initial Federal effort to specify braking requirements for motor vehicles. The standard requires that passenger cars be equipped with a split service brake system, and have stopping ability based upon deceleration rates specified in an SAE Recommended Practice. Requirements for fade and recovery, water recovery, and stability while braking are also included in the standard. These requirements do not, however, represent the full capabilities of modern braking technology. Braking continues to be the most important single element of accident avoidance from the standpoint of vehicle performance. The full utilization of the industry's technological capability in this area, within the limits of reasonable cost, is therefore of highest importance to the safety effort.

The requirements of this standard are specified in terms of performance on a surface of relatively high skid number. The NHTSA recognizes the importance to safety of good braking performance on surfaces such as wet or icy roads. It is monitoring closely the development work in progress on methods, such as antilock systems, designed to enhance vehicle performance over a wide variety of surfaces, in preparation for future rulemaking action adding performance requirements in this area. Until such requirements are made effective, this agency assumes that

manufacturers will design their vehicles for safe braking performance on all types of road surfaces, while continuing to work on, and make provision for, more advanced braking systems.

The notice issued in November 1970 proposed extension of applicability of Standard No. 105 to other vehicle types and covered the same factors deemed important in the earlier standard. These include stopping distance, linear stability while stopping, fade resistance, and fade recovery. The notice also proposed features in hydraulic braking systems that could warn against malfunction, and stop the vehicle should a malfunction appear in the normal service system. The amended standard covers each of these aspects as discussed below.

1. *Applicability.* Standard No. 105 applies to passenger cars, and has been extended to specify requirements for the first time for multipurpose passenger vehicles, trucks, and buses equipped with hydraulic brake systems. A definition of brake power unit has been adopted and appropriate modifications made in the text to clarify that vehicles with central hydraulic power systems were included in the Notice. Standard No. 105a does not apply to vehicles equipped with "air over hydraulic" systems, which remain within the purview of Standard No. 121, *Air Brake Systems*.

2. *Effective date:* to meet the proposed effective date of October 1, 1972, equipment and performance requirements would have been substantially weaker than those that have been adopted and the NHTSA has determined that a later effective date is, overall, in the public interest. It is therefore set at September 1, 1974.

3. *Service brake system.* All vehicles with hydraulic brake systems are required to have a

split service brake system, with partial failure or "emergency" braking features. Effectiveness of the system is demonstrated by a series of road tests covering stopping distance, stability, and fade and recovery, water recovery, and spike stops.

*A. Stopping distance.* As the proposal noted, "perhaps the most important indication of brake performance is the distance in which a brake system can stop a vehicle from a given speed." Stopping distances were proposed from 30 mph, 60 mph, and 80 mph and maximum attainable vehicle speed, under various load and system conditions, based upon vehicle category or weight. These tests included stops with the vehicle at a lightly loaded weight, and stops under partial failure conditions. The following illustrate examples of the proposal and amendment. In addition to the stopping distances discussed below, stopping distances from 30 mph, 80 mph, and maximum attainable vehicle speed are also specified.

*Passenger cars.* It was proposed that passenger cars demonstrate the ability to stop in 185 feet from 60 mph under adverse loading conditions. The stopping distance adopted, 194 feet, is only slightly longer. According to Consumer Information data submitted by manufacturers of 1972 passenger cars, contemporary vehicles ranked 26th to 61st would be unable to meet this stopping distance requirement. This new requirement will result in a substantial upgrading of passenger car stopping ability. Currently under Standard No. 105, passenger cars must demonstrate the ability to stop in 646 feet from 60 mph under partial failure conditions. The new standard lowers this distance to 431 feet, an increase from the proposed 388 feet. The same stopping distance requirement must be met with an inoperative brake power assist or brake power unit.

*Vehicles with GVWR of 10,000 pounds or less.* Vehicles other than passenger cars with a gross vehicle weight rating of 10,000 pounds or less, must demonstrate the ability to stop from 60 mph in 216 feet under adverse loading conditions, and in 484 feet under partial failure conditions.

*Vehicles with GVWR greater than 10,000 pounds.* Vehicles in this category must demon-

strate an ability to stop from 60 mph in 245 feet under adverse loading conditions, and in 553 feet under partial failure conditions.

*B. Stability of vehicle while stopping.* As proposed, a vehicle will be required to stop (other than in spike stops) without any part of it leaving a 12-foot-wide lane. Wheel lockup is permitted at a speed below 10 mph and lockup of only one wheel not controlled by an antilock system is permissible at speeds in excess of 10 mph.

*C. Fade and recovery.* Brake fade characteristics are critical from the standpoint of retaining adequate stopping power despite the high temperatures created by prolonged or severe use. A vehicle will demonstrate fade and recovery capability in two tests, by making a number of fade stops from 60 mph if it is a vehicle with a GVWR of 10,000 pounds or less, or fade snubs from 40 mph to 20 mph, if it is a heavier vehicle. The latter represents a modification of the proposed snub speed range of 50 mph to 15 mph. The proposed maximum speed fade recovery test has not been adopted; the effectiveness test at maximum attainable vehicle speed should indicate whether a brake system will experience problems with fade.

*D. Water recovery.* Service brake systems must also demonstrate an acceptable recovery after exposure to water. The method of immersion has been modified on the basis of comments that the method proposed would necessitate use of a trough 880 feet long. Instead, the amendment specifies that the vehicle shall be driven for not less than 2 minutes at a speed of 5 mph, in any combination of forward and reverse directions, through a trough having a water depth of 6 inches. This change should clarify the test requirement as well as simplifying enforcement procedures.

*E. Spike stops.* The spike stop proposal has been adopted, with a revision to allow 6 check stops (instead of one), at least one of which meets the requirements of the specified distance and pedal force. This allowance recognizes variability of test drivers and vehicles.

*4. Parking brake system.* The parking brake system proposal has also been adopted. When the parking brakes are applied, with a force not exceeding 90 pounds for a hand-operated system

or 125 pounds for a foot-operated system, the parking brake system shall be capable of holding the vehicle stationary for 5 minutes on a 30 per cent grade (20 per cent for vehicles of more than 10,000 pounds GVWR) in both forward and reverse directions. Optional requirements have been adopted for vehicles with a GVWR of 10,000 pounds or less, equipped with a transmission utilizing a parking pawl or detent mechanism within the transmission assembly. Vehicles so equipped may demonstrate compliance by (1) parking with both the parking brake and pawl engaged on a 30 per cent grade, (2) parking on a 20 per cent grade with only the parking brake engaged, and (3) being impacted front and rear, on a level surface, by a 4,000 pound moving barrier without disengagement or fracture of the pawl or detent mechanism.

5. *Reservoirs.* The master cylinder reservoir proposal has been adopted with modifications that allow balance ports and compartmentalized reservoirs in a single integrated master cylinder body and reservoir assembly, and that reduce fluid reservoir capacity requirements from 150 per cent to 100 per cent. The proposed cover, seal, and retention devices have not been adopted since pressure differential warning and low fluid level warning should provide a sufficient safety factor. The proposal was intended also to cover reservoir requirements in systems not using master cylinders and the revised wording of the section clarifies this point.

6. *Brake system indicator lamp.* The proposal would have required separate lamps to indicate when the parking brake is applied, and when a failure has occurred in the service brake system. Standard No. 105a requires only one lamp to serve these functions, to be labeled "Brake". Either the wording or the lens may be the color red. The lamp must light in the event of pressure failure in any part of the service brake system, other than a structural failure of a housing that is common to two or more subsystems, before or upon application of 50 pounds of pedal force upon a manually-operated service brake, or 25 pounds upon a service brake with a brake power assist unit, or when the supply pressure in a brake power unit drops to not less than one-half of the normal system pressure. The lamp must also light, without the application of pedal

force, when the level of brake fluid in the master cylinder reservoir drops to less than the recommended safe level specified by the manufacturer, or to not less than one-fourth the fluid reservoir capacity in any reservoir compartment, whichever is greater. This does not preclude the use of translucent covers or sight gauges in addition to the required lamp. Additionally, the lamp must illuminate when there is a total electrical failure in an antilock or brake proportioning system. All indicator lamps shall be activated when the ignition switch is turned from the "on" to the "start" position, which includes the air start condition on diesel-engine vehicles. The lamps will be deactivated upon return of the switch to the "on" position. No time interval is specified for deactivation, as the NHTSA recognizes that instant deactivation is impracticable for continuous sensing units.

7. *Miscellaneous.* The NHTSA proposed that service brakes be installed so that the lining thickness of drum brake shoes and disc brake pads might be visually inspected without removing the drums or pads. The possibility that contaminants may enter the system if plugs are removed, the differences between riveted and bonded lining thickness, and the location of inspection ports, were some of the technical and safety factors weighing in the conclusion to abandon this proposal.

The agency decided against the proposal that would have established suspension system durability requirements to be met following completion of tests. Since the vehicle must remain within a 12-foot-wide lane as a condition of the stopping distance tests, this will be a satisfactory demonstration of suspension system integrity.

*Effective date:* September 1, 1974. Because of the necessity to allow manufacturers sufficient production leadtime, it is found for good cause shown that an effective date later than one year after issuance of this rule is in the public interest.

In consideration of the foregoing, Title 49, Code of Federal Regulations, is amended by adding § 571.105a, Motor Vehicle Safety Standard No. 105a, *Hydraulic Brake Systems*, as set forth below.

This notice is issued under the authority of sections 103 and 119 of the National Traffic and

Effective: September 1, 1974

Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on: August 23, 1972.

Douglas W. Toms  
Administrator

37 F.R. 17970  
September 2, 1972

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**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 105a**

**Hydraulic Brake Systems**

**(Docket No. 70-27; Notice 7)**

The purpose of this notice is to announce that the effective date of Motor Vehicle Safety Standard No. 105a will be September 1, 1975. Full response to petitions for reconsideration is scheduled for May 1, 1973.

Standard No. 105a, *Hydraulic Brake Systems*, was published on September 2, 1972 (37 F.R. 17970 with corrections at 37 F.R. 19138) with an effective date of September 1, 1974. On December 19, 1972, the NHTSA advised (37 F.R. 27629) that it intended to issue a notice by February 1, 1973, in response to petitions for reconsideration of the standard. The volume of the petitions received and the complexity of the issues involved are such that the agency has not found it possible to publish a full response to the petitions by the date indicated.

The NHTSA has, however, decided to grant petitions requesting a delay in the effective date, to the extent of a one-year postponement. Petitioners have demonstrated to the satisfaction of the agency that because of critical lead-time

problems the original effective date is impracticable. The NHTSA believes that in the additional year provided the industry will have sufficient time to increase the reliability of the systems that otherwise would have been incorporated beginning September 1, 1974, with the result that consumers will be provided with braking systems that have been optimized with respect to safety, performance, and cost.

The full response and discussion of issues raised by the petitioners is planned for issuance by May 1, 1973.

(Sec. 103, 119 P.L. 89-563, 80 Stat. 718, 15 USC 1392, 1407; delegation of authority at 49 CFR 1.51).

Issued on January 30, 1973.

Douglas W. Toms  
Administrator

**38 F.R. 3047**  
**February 1, 1973**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 105a

### Hydraulic Brake Systems

(Docket No. 70-27; Notice 8)

This notice responds to petitions for reconsideration of Motor Vehicle Safety Standard No. 105a and amends the standard in certain respects, effective September 1, 1975.

Federal Motor Vehicle Safety Standard No. 105a, 49 CFR § 571.105a, was published on September 2, 1972 (37 F.R. 17970). Thereafter, pursuant to 49 CFR § 553.35 petitions for reconsideration of the rule were received from many interested corporations. A discussion of the major issues raised by the petitions and their resolution follows.

1. *Policy.* Several petitioners questioned the need for stringent braking requirements. The claim was made that NHTSA has shown neither a need based on accident data relating brake performance to deaths, injuries, or property damage, nor the benefits to be obtained from changed braking systems. Additionally, comments were received that most consumers could not utilize enhanced braking capabilities under most circumstances. Some also questioned the cost to implement the standard (allegedly \$40 an average per vehicle as a minimum, and up to \$75 in some instances for passenger cars).

The NHTSA does not agree with its critics on these policy issues. Braking system performance has consistently rated high on the safety criticality list. The dominance of the role of braking systems in accident avoidance maneuvers has long been recognized and undisputed. The importance of braking in motor vehicle safety is evidenced by the fact that of all vehicle defects which cause or contribute to accidents, brake failures lead the list. In the Consumer Information data on braking stopping distances provided by the automobile manufacturers, the better performing vehicles are reported to stop

from 60 mph in slightly more than one half the distance of the poorer performing vehicles. Large stopping distance differentials among vehicles operating in a common traffic stream are recognized as creating serious hazards to the motorist.

Data have shown that in many accidents a more effective service brake system would have lessened the severity of the collision or possibly averted it. Existing vehicles in many instances do have good braking capabilities but require excessive control forces to utilize these capabilities. Many drivers are not able to exert these forces and hence do not utilize existing systems to the fullest. With reduced stopping distances within the specified pedal forces required by Standard No. 105a, it is the opinion of NHTSA that deaths, injuries, and property damage will be reduced.

Since the requirements also specify that the stopping distances shall be achieved with the vehicle under control, stopping without locked wheels in a 12-foot-wide roadway lane, motorists will be afforded a greater opportunity to operate their brakes effectively in accident avoidance maneuvers.

Cost estimates submitted by petitioners are in agreement with those of the NHTSA. Based upon the information received from petitioners and the changes made as a consequence thereof, however, it is the opinion of this agency that the cost of implementation will be reduced to a figure commensurate with the safety benefits expected to be derived.

With respect to the performance levels specified, the NHTSA has determined that the values are reasonable and do not exceed the inherent capabilities of any of the various vehicle classes.

The values specified for vehicles other than passenger cars will considerably reduce the existing stopping distance differentials among vehicle classes.

Several petitioners commented on what they considered to be a lack of consistency in performance levels between vehicle types. For example, in the second effectiveness test, passenger cars, light trucks and heavy trucks have different performance requirements based upon weight and speed. Standard No. 105a was criticized also because the required stopping distances for heavy trucks with hydraulic brakes were more stringent than requirements for heavy trucks with air brakes (Standard No. 121, *Air Brake Systems*). It was argued that requirements should be the same for similar vehicles regardless of the type of brake system. Petitioners requested that partial failure system requirements, and requirements for failed power units, be identical to those for air-braked vehicles.

Other petitioners requested that emergency-type tests should allow locked wheels as in Standard No. 121. Petitioners, in several instances, requested changes in light load test requirements for the various vehicles. These requests were based on differences in load conditions, inertia load differences in stopping, center of gravity locations, and braking balance differences.

The standard has been amended to recognize the changes in performance due to vehicle weight differences, considering the effects of center of gravity location and weight shifts occurring during decelerations. Also, speed sensitivity effects have been recognized as occurring in all vehicles and appropriate modifications in requirements at the various test speeds have been made. Heavy vehicle requirements have been adjusted where appropriate to make them identical to those existing in Standard No. 121. Some differences have been retained, however. For example, fade tests in Standard No. 105a are run on the vehicle in a road test as compared with a dynamometer test in Standard No. 121. Dynamometer tests were selected in Standard No. 121 since vehicles used primarily in combinations are included in that standard. Compatibility between vehicles (tractor and trailer) was considered to be an important factor in the brake

system evaluation and could most easily be determined on the dynamometer.

Revisions to Standard 105a also have been made to allow wheel lockup on emergency-type tests such as spike stops, tests with failed power units, and partial system tests. Also, in the parking brake test, the limit of traction of the braked wheels is used in specifying parking brake system performance on a 30 per cent grade. There are no changes in parking braking system requirements because of weight differences. The NHTSA is of the opinion that all vehicles, regardless of weight class, are frequently parked in a lightly loaded condition and hence should be tested under this condition.

2. *Effective date.* The NHTSA has previously announced an overall delay of one year in the effective date of Standard No. 105a (38 F.R. 3097).

Petitioners generally considered the original effective date of September 1, 1974, to be unreasonable and impracticable. The earlier effective date as it applied to trucks, buses and multipurpose passenger vehicles coincided with the same effective date for Standard No. 121, issued some time before Standard No. 105a. The air brake systems will generally have new and larger foundation brakes, new suspensions and other related components, antilock or brake proportioning systems and new split systems as well as controls. Hydraulic-braked vehicles require in most instances similar changes to meet 105a requirements. However, manufacturers and suppliers had prior commitments to concentrate much of their available manpower, equipment and facilities to the development of conforming air brake systems. These manpower, equipment, and facilities are generally the same required for the development of conforming hydraulic-braked vehicles, and thus the changes to hydraulic-braked vehicles cannot be made simultaneously with air brake system changes. In addition, sufficient recognition must be given to the lead-time necessary for application studies, production standardization in areas where this is possible, drawing and specification preparation, tooling design time and procurement, and establishing manufacturing facilities. In some instances, plant facilities must be built along with con-

struction of development and test facilities. Petitioners also mentioned the significance of reduced product reliability if it is necessary to completely redesign entire vehicle lines simultaneously. Additional problems that can arise are related to the capability of the manufacturers to train adequately technical personnel to assemble, service, and maintain the new vehicles.

Several petitioners requested an extension of the effective date for vehicles other than passenger cars beyond September 1, 1975. International Harvester requested a date of September 1, 1976 for these vehicles. Others would not predict a date on which they could meet the requirements.

Several commenters stressed the fact that metallic, semi-metallic, or ceramic linings, considered exotic materials presently, would probably be required to meet Standard No. 105a as of September 1, 1974. Resulting penalties would occur in cost (high wear, scoring, etc.) and poor or erratic performance under normal conditions.

Comments were also received concerning four-wheel drive vehicles. Low volume and consequent high costs for necessary changes are problems in this segment of the industry. Suppliers of components for these vehicles are allegedly reluctant to design and tool parts. In addition, manpower and facilities are not available for these jobs since most time and efforts must be utilized for the higher volume vehicles. An indefinite delay in an effective date for these vehicles has been requested.

After careful evaluation of all the petitions, the NHTSA considered that good cause had been shown for a delay of one year in the effective date of the standard. But it has been determined that a further delay, either for the standard or for separate vehicle categories is not in the interest of motor vehicle safety, and those petitions for a further extension of time are denied.

3. *Definitions.* Numerous comments were received on the definitions. In some instances amendments are made, in others, none. Clarifications have been provided where they were requested.

Questions relating to brake power assist units and brake power units have been raised. The distinction between the two is that a brake power assist unit has a push-through capability, i.e., the

operator can apply additional muscular effort and obtain braking action. A brake power unit does not have this capability. If power is lost, a driver cannot increase braking force by additional muscular effort on the control.

Some petitioners mentioned units which function in both modes, i.e., as a brake power unit in one condition, and as a brake power assist unit in a second condition. For example, a unit may function as a brake power unit under normal operating conditions, but when a power failure occurs, it operates as a brake power assist unit. For purposes of compliance, the failed mode of operation would be the critical mode. Therefore, with inoperative power units, the test requirements should be met depending on how the system operates in the failed mode. The example discussed above would be tested as a brake power assist unit.

The definition of "brake proportioning system" raised the question whether a fixed or variable system was intended. The term has been redesignated "variable brake proportioning system" to clarify the agency's intent.

The definition of "lightly loaded vehicle" does not specify an additional weight allowance for a load platform or body to be added to an incomplete vehicle, but in the opinion of some petitioners it should. Since the standard applies to complete vehicles, a manufacturer must use his discretion in applying additional weight to incomplete vehicles, taking into account the resulting changes in weight and center of gravity, when providing information on Standard No. 105a to subsequent multistage vehicle manufacturers.

Some manufacturers questioned the adequacy of the test surface specification: the "skid number" produced by American Society for Testing and Materials Method E-274, using a test trailer to measure the coefficient of friction. The complaint was made that the measurement results vary from one trailer to another, and vehicle performance results vary from one surface to another with supposedly the same skid number, on the order of 20 percent. It was also argued that the ASTM test was qualitatively inadequate, in that it measured sliding friction rather than peak or incipient friction.

The NHTSA does not accept these arguments. In the first place, it should be noted that thrust of the manufacturers' arguments is not only to abort this rulemaking, but to cast doubt on the validity of the existing braking standard. Whatever its shortcomings, the ASTM test is the only one to the knowledge of this agency that provides an objective and quantitative measure of the frictional characteristics of a road surface, and no other was suggested by petitioners. The present passenger car braking standard incorporates an SAE Recommended Practice (J843d) that specifies only a "dry, smooth, hard-surfaced roadway of Portland cement concrete (or other surface with equivalent coefficient of surface friction) that is free from loose materials," a far vaguer description.

Furthermore, the NHTSA does not find the argument based on variations in test results to be persuasive. The variations of 15 and 20 percent cited are extreme figures. With carefully calibrated and controlled test instruments and conditions, as specified in the standard, evidence before this agency indicates that the normally experienced variations are much smaller. Manufacturers have attempted to impose a criterion of perfect repeatability on the safety standards. Perfect repeatability, however, is an illusion. In the "real world" of materials testing, particularly of gross characteristics such as vehicle braking capability or crashworthiness, variation in results is inevitable; the question is not whether, but how much, variation is acceptable. Obviously, the standard should be designed to reasonably minimize the variability of test results, from the standpoint both of manufacturing costs and of effective regulation.

In this case, the ASTM method chosen was developed in 1965, and has been widely used since then for the purpose of vehicle performance testing. Moreover, it has been in force since 1970 in a closely similar NHTSA regulation: the Consumer Information regulation on Vehicle Stopping Distance (49 CFR 575.101), under which manufacturers have been required to test their vehicles' stopping-distance capabilities, and report them to consumers and to the NHTSA. The same statutory penalties have applied to a failure to meet these reported stopping distances when tested by the government as would apply

to a failure to meet the stopping distance required by a standard. In light of these factors, the arguments that the method for specifying the test surface is inadequate are found to be without merit.

The NHTSA also rejects the suggestion by the Recreational Vehicle Institute that this agency should supply or measure the test surface, because of the limited capabilities of motor home manufacturers. The clearly intended result of the National Traffic and Motor Vehicle Safety Act is that the private sector should bear the cost of regular conformity and certification testing. There is no requirement that each vehicle manufacturer have his own measured test track. Small manufacturers can have their vehicles tested by contract with testing companies; they can use their trade associations to arrange for use of measured test tracks in convenient regional locations; or they can work with the chassis manufacturer and use his test results.

The sudden application of force in a "spike stop" is 200 pounds applied in 0.08 second. Chrysler Corporation suggested a "band" of 0.05–0.20 seconds as permitted in SAE Recommended Practice J229 *Service Brake Structural Integrity Test Procedure*, March 1971. The purpose and legal significance of a test condition in a Federal motor vehicle safety standard are different from those of an industry test practice, and a band or tolerance as requested by Chrysler is inappropriate and unnecessary in the former. Assuming that a faster application is more demanding of vehicle performance, Chrysler in effect has a band from 0 to 0.08 second for its tests, which should be designed to show that the vehicle is capable of meeting the requirements with spike stops of 0.08 second.

The definition of "stopping distance" varied from the notice of proposed rulemaking in that the phrase "start of the brake application" was changed to "point of application of force to the brake control." Wagner Electric Co. considers the modified definition as more stringent since, in its view, the notice allowed both "force" and "movement" while the amendment allows only the former. The NHTSA disagrees with Wagner. Both versions refer purely to the brake pedal, and not to more remote parts of the brake

system. This agency is unaware of any measurable difference in time between the introduction of force to the pedal and the initiation of pedal movement, and Wagner has supplied no evidence to the contrary. The modified wording has been adopted for purposes of clarity.

General Motors objected to stopping distances as performance requirements, and expressed its views that deceleration rates provide more objective performance criteria. This represented a departure from GM's previous views that build-up and maintenance of a fixed deceleration depended upon varying driver skills, affecting reproducibility. The variety in driver skills is one reason the NHTSA considers measurement of a specified distance more desirable than maintenance of a fixed deceleration rate. Insertion of a fixed build-up time would introduce a complication. The stopping distances specified do not include a fixed build-up time but instead allow use of various characteristics, including greater or lesser build-up times, as long as the vehicle does not exceed the stopping distance specified. A specified maximum (but not fixed) build-up time is used in fade tests where decelerations are specified. Further, the distances expressed in Standard No. 105a are maximum distances, and manufacturers will necessarily design their vehicles to perform with a margin within those limits, thus reducing problems of objective measurement.

4. *Required stopping distances and pedal control forces.* The stopping distance values, in most instances, were considered by petitioners to require redesigned braking systems. In some cases, larger brake systems would be required, incorporating front disc brakes with power assist and larger rear drum brakes. Other vehicles, particularly trucks, buses, and multipurpose passenger vehicles, would require the addition of antilock systems or brake proportioning systems, along with new types of split systems (or completely redundant systems). These systems, it is alleged, would be required to meet the full system effectiveness and the partial system effectiveness requirements.

The 30 mph and maximum speed stopping distances were considered too stringent by most petitioners. The very short stops involved, along

with the buildup or actuation time necessary, were the main problems in the 30-mph tests. The problem of the speed sensitivity of lining materials was the main factor noted in comments relating to the high speed and maximum speed tests.

For first effectiveness test, recommended changes in stopping distances ranged at 30 mph from no increase to an increase of 9 feet for passenger cars, 7 feet for light trucks, and 20 feet for heavy trucks. At 60 mph, requests for increases of up to 17 feet for passenger cars, 7 feet for light trucks, and 75 feet for heavy trucks were received. Two petitioners suggested deleting heavy truck requirements, either to be consistent with Standard No. 121 or until "more realistic data" was available.

The second through fourth effectiveness tests were more severely criticized by petitioners. Several suggested that fourth effectiveness test values be increased to at least those used in the first effectiveness tests (involving increases of 5, 7 and 10 feet at 30 mph, and changes of 20, 26, and 32 feet at 60 mph, for passenger cars, light trucks and heavy trucks, respectively). Several commenters recommended deletion of tests at speeds greater than 80 mph. For light and heavy trucks, maximum speeds of 60 mph to 80 mph were recommended.

Certain modifications in stopping distances and test speeds have been made in response to these comments. The maximum test speed for a vehicle with a GVWR that exceeds 10,000 pounds has been reduced from 80 mph to 60 mph. The maximum test speed will be 100 mph, specified only for those passenger cars which attain a speed of 104 mph or greater in 2 miles. If the speed that a passenger car is capable of attaining in 2 miles is from 99 to 104 mph, its maximum test speed will be 95 mph. Intermediate test speeds between 80 and 95 mph, and 60 and 80 mph have also been eliminated for all vehicles; thus if a vehicle's top speed is from 84 to 99 mph, its top test speed is 80 mph; if the top speed is from 64 to 84 mph, its top test speed is 60 mph. Stopping distances have been increased slightly in most instances from those previously required; an example is the second effectiveness test where the 60-mph stopping distance for pas-

senger cars at GVWR will be 204 feet rather than 194. Under partial failure conditions at the same speed, the stopping distance for passenger cars has been increased from 431 to 456 feet.

Standard No. 105a required stops to be made at pedal forces that varied from 15 to 100 pounds at stops from 30 mph, to 20 to 150 pounds at stops from 65 mph or higher. Pedal control force values were objected to and requests for changes were made, ranging from an increase at 30 mph to 120 pounds to an across the board increase to 150 pounds maximum for all tests. Petitions were based generally on the need either to allow higher pedal forces to reduce brake sensitivity or to provide a simple single value for all tests. A change to allow 200 pounds of maximum pedal force on parking brake tests for light trucks was also requested. Several petitioners also requested modifications in fade recovery test pedal force values.

The NHTSA considers that most of these requests are meritorious. The standard is being amended to specify a uniform force range of 15 to 150 pounds for all stops that must be made within required stopping distances, and this will be expressed as a test condition in paragraph S6. However, the parking brake test pedal forces must, in the opinion of the NHTSA remain uniform at 125 and 90 pounds (foot and hand) and the petition on this point is denied. General Motors requested a force for the 5th (final) fade recovery stop that is within plus 50 pounds and minus 5 pounds or minus 40 percent (whichever is greater) of the average control force for the baseline check. These values are considered too broad. Some relief is deemed warranted, however, and Japan Automobile Manufacturers Association's suggested value of minus 10 pounds has been adopted.

5. *Inoperative power units.* In addition to the requests for clarification between brake power assist units and brake power units petitioners requested changes in requirements that would recognize the reserve capabilities that have been designed into the inoperative mode of some power systems. These petitions have been granted, and tests with an inoperative brake power unit or power assist unit have been modified to allow

optional utilization of reserve capabilities in stopping. Under the optional procedure a vehicle makes a series of stops from 60 mph at specified decelerations when the inoperative unit is not initially depleted of all reserve capability and in a final stop within 554 feet when the unit has been depleted of its reserve.

6. *Fade and recovery requirements.* Standard No. 105a required that vehicles with a GVWR of 10,000 pounds or less demonstrate fade resistance in two fade and recovery tests of 10 and 15 stops each from 60 mph at 15 fpsps.

Fade and recovery requirements were considered extremely stringent by petitioners. Several petitioners suggested a reversion to the existing requirements with minor modifications. Others suggested changes in test weights. Most were willing to accept the 150-pound pedal force limitation if other modifications proposed were acceptable. GM recommended that two different fade test procedures be adopted, the first simulating a mountain type fade test at GVWR with increased distance intervals, and the second being similar to that adopted except at a reduced test load.

These petitions have been deemed in large part to have merit, and the two fade tests will be revised to consist of 5 and 10 fade stops at 15 fpsps, each followed by an additional 5 stops at the maximum deceleration attainable between 5 and 15 fpsps. The fade test requirements for vehicles with a GVWR in excess of 10,000 pounds remains unchanged. However, no procedure simulating mountain descents has been developed, and GM's request is denied. International Harvester, in the fade test procedure, requested that the time to attain the required deceleration presently 1 second, be increased to 5 seconds. This request is denied, since an increase has been found unnecessary.

7. *Water recovery.* GM petitioned for substantial changes in the water recovery test, asking relocation within the test sequence, modified control forces, and increased number of recovery stops for heavy trucks. None of these requests has been found to have merit. A change in sequence would necessitate reevaluation of the effect of the standard with a possible consequent further delay in the effective date.

8. *Spike stops.* With regard to the spike stop requirements, Bendix requested that the stopping distance for the effectiveness (check) stops be the equivalent of the first effectiveness test rather than that of the other effectiveness tests. The request has merit, and the stopping distance requirements of the first effectiveness test have been adopted.

GM requested that for the spike stop test manufacturers be allowed to use separate vehicles not used in the other tests, while Harvester requested a reduction in stopping speed from 60 mph to 30 mph. Because of the changes in stopping distance that have been adopted, no further relief is deemed necessary and the petitions are denied.

9. *Parking brake systems.* The parking brake system requirements, particularly in the lightly loaded vehicle condition, were objected to as violating the laws of physics. As mentioned earlier, petitioners generally requested inclusion of a "limit of traction" condition. Vehicles with a great range of loading conditions are allegedly incapable of holding on grades specified in the requirements (20 percent or 30 percent). Particular stress was placed on brake holding capability on a 75 skid number surface. One commenter requested that the same requirements apply to all vehicles, claiming it unrealistic for light vehicles to meet the 30 percent grade requirement while heavy vehicles only had to meet a 20 percent requirement, and suggested use of a Swedish standard (16 percent grade, 110 pounds of foot brake force, 88 pounds of hand brake force). Ford requested allowance for use of a multistroke parking brake application. American Motors Corporation requested reinstatement of existing Standard No. 105 requirements. GM and Chrysler objected to the requirement that the parking brake be of a "friction type" which they considered design restrictive, prohibiting other acceptable parking brake systems.

The parking brake system test remains substantially as adopted. The performance requirements have been found feasible with present technology. A multistroke application is permissible, and limit of traction language has been added to the 30 percent grade requirement, to eliminate the irrelevant problem of tire slippage.

The requirement for a friction-type parking brake is also retained. In a case of complete loss of service brake capability, a friction-type parking brake furnishes a residual stopping capability for a moving vehicle that is absent in a pawl-type system (such as the "park" position transmission stop). If the phrase "friction type" appears design restrictive of other types of parking brake systems that would provide equivalent capability, this agency will be receptive to suggestions for substitute language, with adequate supporting information.

Wagner petitioned for deletion of the parking brake test with the vehicle at lightly loaded weight. This request is denied as the NHTSA believes that vehicles are frequently parked in a lightly loaded condition, and that a test should therefore be run at this vehicle weight.

10. *Indicator lamps.* The standard has been amended so that indicator lamps may now be activated as a check of lamp function when the ignition is in the on position and the engine is not running, or in any position between on and start that is designated by the manufacturer as a check position. Ford petitioned that the brake fluid level indicator be deleted, but its request is denied as the NHTSA has determined that a warning should be provided in the event of slow leaks. Conversely, Mercedes-Benz of North America petitioned for deletion of the pressure differential warning, alleging that the fluid level indicator is sufficient. This, too, is denied, as the fluid level indicator will not indicate pressure failure until the fluid is at the level specified for a warning, an entirely different function. Several petitions asked that the 200-psi brake fluid pressure level be adopted (this had been proposed in Notice 1 for measurement at master or slave cylinder outlets), and these petitions have been granted. In response to several petitions, the illumination provided when an indicator lamp is activated may be flashing as well as steady-burning.

11. *Reservoirs.* In the requirements for the master cylinder reservoir, clarifications have been provided in the determination of a fully worn, fully applied lining position. Reservoir labeling has been modified to require color contrasts of printed labels only, the contrast in lettering and

background on stamped or embossed labels deemed a sufficient contrast in those instances. GM asserted that the reservoir capacity requirements were unnecessary in light of the requirement for a fluid level indicator, and petitioned that the requirements be deleted. The petition is denied; the volume requirements are necessary to provide sufficient fluid for a full range of brake travel.

12. *Test conditions.* The specified test load of 50 to 725 pounds per cubic foot has been refined by assigning density distribution to various vehicle areas, for example 50 to 125 pounds per cubic foot in the seating area of all vehicles. Several manufacturers requested that the transmission selector control be in gear during all test decelerations, alleging that the neutral position is not representative of consumer usage. These requests are denied. Deceleration in gear by adding driveline drag masks the true effectiveness of the brake system. Comments were also directed to the prohibition against lockups, generally alleging inconsistency with Standard No. 121. These comments had merit, and the test condition has been amended to allow lockups during spike stops, partial failure stops and inoperative brake power or power assist unit stops. On the other hand, a request to allow more than one locked wheel is denied. Provision has been made for installation of a second thermocouple at the beginning of the test sequence if the lining wear is expected to reach a point causing the first thermocouple to contact the metal rubbing surface of a drum or rotor. Since the brake control forces have been modified to a uniform range of 15 to 150 pounds, except as otherwise specified, control forces have been added to the list of test conditions.

13. *Test procedures and sequence.* Most American manufacturers and suppliers commented on the severity of the sequential procedure, with arguments of the following nature: The high speed effectiveness tests early in the sequence result in changes in lining characteristics which, in turn, affect the capability of the vehicles to comply with parking brake and partial systems requirements. Since no reburnish is allowed until after the first fade test, additional lining deterioration occurs as light load tests and fade

tests are run. When final effectiveness tests are run, organic linings (normally used in today's vehicles) have deteriorated appreciably. This sequential testing, without reconditioning at intervals, results in brake torque balance changes as the test sequence progresses. To offset these changes and to enable a vehicle to go through compliance tests satisfactorily, many vehicles would have to be designed with an initial high gear brake capacity. This results in an unsafe early rear brake lockup, particularly at the initial light load test. As the sequence progresses, brake balance shifts toward a more reasonable balance, where all wheels approach lockup at or near same point. A brake balance which is designed initially for GVWR test conditions to meet Standard 105a requirements, would be dangerous to consumers for normal usage at 2 to 3 passenger loads due to rear wheel lockup and resultant uncontrollable skids. Recommendations by petitioners generally favored less testing at GVWR, reduced maximum test speeds, lessened fade requirements, and lessened final effectiveness requirements. The various changes would allow design of a brake system more suitable to normal consumer usage rather than the usage encountered in 105a tests. Ford recommended some changes in sequence but submitted a procedure incorporating the 105a sequence with modified performance requirements. GM suggested a drastically revised sequence along with reduced performance requirements. Several petitioners recommended additional burnish stops and adjustments at several points, generally after each effectiveness series. Ford proposed a 200 stop additional burnish after the second fade test.

In responding to petitions for reconsideration, the NHTSA has not modified the sequence of the test procedure. Recognizing the validity of many of the comments, the NHTSA instead has adjusted all vehicle performance values to more closely correlate sequential testing with normal everyday driving performance. This has been accomplished by (1) reducing the high speed performance requirements, (2) eliminating high speed performance requirements at early sequence test points and retaining them only in the last effectiveness test, (3) allowing extra burnish stops for reconditioning of the lining materials, (4) modifying fade performance requirements,

(5) allowing a broader range of control force requirements while maintaining a maximum force limit of 150 pounds, (6) allowing extra adjustments of the brake system during the test sequence to provide more optimum brake performance, (7) modifying fade and wet-brake control force requirements to allow a broader range of forces without allowing a range that might produce severe over- or under-recovery. These modifications are intended to allow manufacturers to design braking systems with a balance that will provide satisfactory overall performance.

At Ford's request, the general test procedure instructions have been modified to require lock-out of automatic adjusters prior to burnish and for the remainder of the test sequence.

For the pretest instrumentation check, requests were received to specify a minimum number of instrumentation check stops or snubs, as well as the presently specified maximum. Such a specification would, however, be meaningless. With the maximum number specified, each manufac-

turer knows precisely the "worst case" that his vehicles must be designed for, and should test his vehicles at or above that level.

In consideration of the foregoing, 49 CFR § 571.105a, Motor Vehicle Safety Standard No. 105a, is revised to read as set forth below.

*Effective date:* September 1, 1975. Because these amendments relate to a standard that is effective September 1, 1975, it has been determined for good cause shown that an effective date later than 180 days after issuance is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 USC 1392, 1407; delegation of authority at 38 F.R. 12147).

Issued on: May 11, 1973.

James E. Wilson  
Associate Administrator  
Traffic Safety Programs

**38 F.R. 13017**

**May 18, 1973**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 105-75

### Hydraulic Brake Systems

(Docket No. 70-27; Notice 10)

This notice responds to further petitions for reconsideration of Motor Vehicle Safety Standard No. 105a and amends the standard in certain minor respects effective September 1, 1975.

Federal Motor Vehicle Safety Standard No. 105a, 49 CFR 571.105a, *Hydraulic brake systems*, was published on September 2, 1972 (37 F.R. 17970). Thereafter, pursuant to 49 CFR 553.35, petitions for reconsideration of the rule were received and, in response, a revised Standard No. 105a was published on May 18, 1973 (38 F.R. 13017). Timely petitions for reconsideration of the revised rule were received from American Motors Corporation (AMC), Wagner Electric Corporation (Wagner), General Motors Corporation (GM), International Harvester Company (Harvester), Japan Automobile Manufacturers Association (JAMA), Ford Motor Company (Ford), Recreational Vehicle Institute (RVI), and Toyota Motor Sales, USA, Inc. (Toyota). This notice discusses the major issues raised and their resolution. The Administrator does not consider repetitious petitions and to the extent that these further petitions were repetitious of the initial ones (*e.g.* deletion of tests above 80 mi/h for heavy vehicles, modification of pedal forces, running tests in gear rather than in neutral), they have not been considered, pursuant to NHTSA regulations (49 CFR 553.35 (c)).

GM petitioned for rulemaking that would rescind Standard No. 105a on the grounds that the brake systems it has designed for the 1976 model year would have to undergo substantial changes in subsequent model years when it plans to introduce lighter vehicles with improved fuel consumption. This agency considers energy needs along with other factors relevant to its rulemak-

ing actions. The information available to the NHTSA does not indicate, however, that Standard No. 105a is incompatible with increased fuel mileage, or would add substantially to the weight of the vehicles covered. The NHTSA does not consider a change in a manufacturer's own design plans to be a justification for discarding an important new set of requirements for which the world industry has been preparing for several years. The petition by GM to rescind the standard is therefore denied.

*Effective date:* Harvester and RVI petitioned for a delayed effective date for certain categories of vehicles. Harvester requested a one-year delay in the effective date for vehicles whose GVWR exceeds 10,000 pounds, stating its doubt that acceptable antilock systems will be available to it by September 1, 1975, and that the advance hardware proposals from its brake system suppliers indicate that considerable design and development time is still needed. RVI wished an extension of 2 years for recreational vehicles built upon truck and multipurpose passenger vehicle chassis, alleging that time will be needed for testing and retooling after receipt of the first chassis or vehicle certified as conforming to the new braking standard.

The NHTSA does not consider further extension of the effective date to be in the public interest, and the petitions are denied. The broad outlines of the performance requirements have been known to industry since publication of the initial proposal in November, 1970, with its proposed effective date of September 1, 1972. Since publication of the new standard in September, 1972, the effective date has been delayed one year to September 1, 1975, and considerable relief provided for vehicles whose GVWR exceeds 10,000 pounds.

*Definitions.* In response to a petition by JAMA, a definition of "backup system" is adopted. Such a system is "a portion of a service brake system, such as a pump, that supplies energy in the event of a primary brake power source failure".

*Effective requirements.* Clarifying words are added throughout in response to various requests. For example, the fourth effectiveness test now makes it clear that if the speed attainable in 2 miles is 99 mi/h or greater, stops must be made from both 80 mi/h and a specified higher speed, and not from the higher speed alone. In response to GM's comments on inoperative brake power and power assist units (S5.1.3), a new S5.1.3.4 has been adopted that allows brake power assist units to be tested under the optional procedure if the unit utilizes a backup system.

The word "average" has been deleted from S5.1.4.2 (fade and recovery) which specified fade stops in excess of "an average deceleration" floor, at the request of Wagner, as the inclusion of the word was erroneous and does not reflect the test procedures of S7.11.2.1.

The brake system indicator lamp requirements (S5.3.1) were the subject of numerous petitions, most of which have been granted. The NHTSA reiterates that the methods of pressure failure indication in S5.3.1(a) are alternative rather than inclusive. Harvester asked that S5.3.1(a) be amended to delete the qualification of pressure measurement at a slave cylinder outlet "if the master cylinder controls slave cylinders at a booster unit". It argues that with this design configuration it should be allowed to measure pressure at the master cylinder outlet. The NHTSA agrees that the original wording of S5.3.1(a) is design restrictive and that measurement at either the master or slave cylinder outlet is satisfactory for monitoring pressure, and the qualifying phrase is removed. S5.3.1(a)(1) requires activation of the indicator upon activation of "a line pressure of not more than 200 psi". Ford requested an amendment to clarify that the intent is to specify a differential pressure between the operational and failed brake systems. The clarifying amendment has been made and the pressure differential increased to 225 psi to compensate for certain power-assisted units. As a

failure indicator GM prefers a switch that would activate the warning lamp when the brake pedal has been depressed past a certain point, rather than a lamp activated by fluid pressure failure.

The petition is denied, as the NHTSA has determined that the brake pedal travel involved to activate the lamp would not provide an adequate warning.

JAMA and Toyota asked for an amendment or interpretation of S5.3.2 that would allow the indicator lamp to remain activated when the ignition is returned to "on", after the engine is started. To allow the lamp to remain on after the engine is started might degrade the importance of the check that the system is intended to indicate, and that the request is denied. JAMA also requested that if there is a separate parking brake indicator that it be labelled "Park", and this petition has been granted.

GM requested that the volume requirements of master cylinder reservoirs on large trucks be reduced to one-third that required by the new standard. Since NHTSA has reduced the requirement in response to previous petitions, from 150 per cent to 100 per cent of fluid displacement, it does not deem it in the interest of safety to reduce it further. GM's petition is denied. The agency wishes to clarify, however, that the volume concerned is only that within the storage compartment, and does not include that fluid which may remain in pipes, hoses, and fittings. At Harvester's request, S5.4.2 is amended slightly to clarify that the minimum reservoir capacity is that of the total reservoir system rather than each reservoir compartment.

S5.6, *Brake system integrity*, had been amended in May 1973 to specify that friction facing tear-out of the lining must "not exceed 10 percent of the lining on any frictional element" rather than "10 percent of the lining surface areas". GM requested reinstatement of the original requirement. The request is denied. The language that was adopted in May 1973 clarified a previously existing ambiguity while providing a measure of relief that had been previously requested.

*Conditions.* Ford interpreted the words "test load" in S6.1.1 as the load required to be added to bring a vehicle to its GVWR. In some instances, if this added weight were distributed

proportionally to GAWR the front GAWR would be exceeded. NHTSA intended that a vehicle be loaded at GVWR so that its gross vehicle weight is distributed proportionally to its GAWR, and S6.1 is amended appropriately. Ford, JAMA, Toyota, and RVI petitioned for a change in the load material density specification of S6.2 to allow use of iron shot or bars in the passenger seating area, or in cargo areas of light and heavy trucks. The RVI request would allow use of lead shot in drawers, cupboards, and cabinets of recreational vehicles. In large part, these requests have been granted; maximum material densities have been increased from 125 to 450 pounds per cubic foot in seating areas of passenger cars, and in cargo areas of vehicles with a GVWR of 10,000 pounds or less. To allow the use of cast iron in the cargo areas of heavy trucks the minimum density has been lowered slightly from 450 to 400 pounds per cubic foot. The RVI request, however, is not adopted as this would permit too broad a range for testing and consequent difficulty of reproducing test results. It was to alleviate this problem that the original Standard No. 105a was amended on this point in May 1973. AMC and GM asked that the tire inflation pressure be that specified for the test weight, rather than for the GVWR of the vehicle. In NHTSA's view, the time to reset tire pressures after allowing tires to cool would complicate and lengthen test procedures. There are only three tests run at the lightly loaded weight, and no data have been submitted to show that the tire pressure required causes a substantial increase in stopping distances.

S6.10 allows only one uncontrolled wheel to lock at braking speeds above 10 mph on any given stop. GM suggested that this section allowed one wheel per axle to lock. GM's interpretation is incorrect, however; "one wheel" means one wheel on the vehicle. Ford wanted to reset thermocouples during brake inspections. This requested amendment is denied. Except for normal adjustment, inspections for thermocouple depths are not allowed once a test series has begun, in order that brake systems not be disturbed. The NHTSA may consider different depths for thermocouples in the future if data are obtained showing a need.

*Test procedures.* GM, JAMA, Toyota, and RVI petitioned that lockout of automatic brake adjusters be optional rather than required. On review the NHTSA has decided that there is no reason not to allow use of adjusters during testing. However, if a manufacturer locks out brake adjusters, this will now occur when linings are installed after the thermocouple installation; *i.e.* before the test series rather than before burnish. This is intended to save time in the test procedures.

The service brake burnish procedure for heavy vehicles is being amended pursuant to a petition by GM, to be in accord with the procedure recently proposed for such vehicles in Standard No. 121. Minor clarifying amendments have been made at various places in the test procedures. Toyota asked whether S7.9.4 applied only to mechanical proportioning systems. This paragraph applies to any variable proportioning system whether mechanical, electrical, hydraulic or otherwise. It does not apply to a fixed mechanical proportioning system.

*Figures and tables.* Pursuant to a request from Ford, the dimensional specification of "1½ inches" has been added to Lever A on Figure II. JAMA and Toyota want to consider a modified T lever as a "T" rather than as an "L" type. The NHTSA will consider this design a "T" type if the short side is no less than one-third the long side. JAMA and Toyota requested that the load point on the "L" type handle be revised to 1½ inches from the handle end instead of from the center line. This request is denied, as the original requested dimension (30 mm) has been previously increased to 1½ inches (approximately 37 mm) and no further change is deemed necessary.

Harvester was the sole petitioner to request an increase in the stopping distances of Table II, asking that vehicles with a GVWR of 10,000 pounds or less in the lightly loaded condition be afforded the same maximum stopping distance from 60 mph as required of similarly loaded vehicles under the same conditions in Standard No. 121. It also requested an increase in the fourth effectiveness stopping distance to give the same difference in deceleration at 80 mi/h as allowed by Standard No. 105 at 60 mi/h. Both

petitions are denied. Air-braked vehicles covered by Standard No. 121 include truck-tractors with a high center of gravity and usually a higher front-to-rear weight distribution than light trucks, so that the lesser stopping distance in Standard No. 105 is justified. The test value of the fourth effectiveness test reflects previous modifications for requirements at 60 mi/h. The industry in general has not disclosed any problem in complying with the deceleration values from 80 mi/h. The correct stopping distance for heavy vehicles from 50 mi/h in the first, fourth, and spike effectiveness tests is 193 feet, not 183 feet as previously published.

GM, Toyota, and JAMA requested an increase in the deceleration values of Table III as an allowance for larger vehicles tested to optional brake power and assist unit procedures. This request is denied. These vehicles are presently required to meet only a 6.3 ft/s/s deceleration which is considered the minimum value acceptable.

Finally, Harvester wanted an inclusive pedal force range of 15 to 150 pounds for all phases of compliance activity including baseline checks. The NHTSA considers a 150-pound pedal force too high for baseline tests at low speeds and

relatively low decelerations, and the petition is denied.

Although the NHTSA has on occasion used the subletter "a" to denote comprehensive revision of existing standards effective at a future date, such standards will henceforth be identified in terms of their effective dates. Thus "Standard No. 105a" becomes "Standard No. 105-75 (effective September 1, 1975)".

In consideration of the foregoing 49 CFR 571.105a, Motor Vehicle Safety Standard 105a, hydraulic brake systems, is amended as follows:

*Effective date:* September 1, 1975. Because these amendments relate to a standard that is effective September 1, 1975, it has been determined for good cause shown that an effective date later than 1 year after issuance is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on February 14, 1974.

James B. Gregory  
Administrator  
39 F.R. 6708  
February 22, 1974

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 105-75

### Hydraulic Brake Systems

(Docket No. 70-27; Notice 11)

This notice responds to petitions for reconsideration of the amendments to 49 CFR 571.105-75, Motor Vehicle Safety Standard No. 105-75, published in the *Federal Register* on February 22, 1974 (39 F.R. 6708). The standard is amended to defer for one year the requirements for a brake fluid level sensor for vehicles with a GVWR over 10,000 pounds, and for two years, a 60-pound maximum baseline pedal effort on vehicles with a GVWR over 15,000 pounds. Slightly increased stopping distances in the third effectiveness test are adopted for one year for certain heavy vehicles at lightly loaded vehicle weight.

Timely petitions for reconsideration of the amendments were received from Girling, Ltd., Wagner Electric Corporation (Wagner), Ford Motor Company (Ford), General Motors Corporation (GM), and Recreational Vehicle Institute, Inc. (RVI). International Harvester Company (Harvester), subsequent to the time allowed for filing petitions for reconsideration, raised certain issues in writing to the Administrator, and its presentation, in accordance with NHTSA regulations, has been considered as a petition for rulemaking. This notice discusses the major issues raised and their resolution.

*Effective date:* RVI again petitioned for a delayed effective date for recreational vehicles built upon truck and multipurpose passenger vehicles chassis, alleging that time will be needed by final-stage manufacturers for testing and retooling after receipt of the first chassis or vehicle manufactured after the effective date of Standard No. 105-75.

RVI's petition is found to be repetitions of arguments raised previously, and accordingly, pursuant to NHTSA regulations (49 CFR

553.35(c)), has not been granted. The denial of Notice 10 therefore stands, on the grounds set forth in Notice 10 of this docket. In brief, the NHTSA expects a manufacturer of incomplete vehicles to provide final-stage manufacturers, pursuant to 49 CFR 568, with information sufficient to indicate how the final-stage manufacturer may achieve compliance with Standard No. 105-75. Since the effective date of the standard is over a year away, there remains sufficient time for final-stage manufacturers to discuss with manufacturers of incomplete vehicles the kind of information that is to be provided, and to resolve such problems as may appear.

Harvester and Wagner have apprised the NHTSA of unexpected leadtime problems associated with the incorporation of brake fluid indicators into master cylinders of heavy vehicles. The agency has confirmed the seriousness of these problems, and has determined that they derive from factors substantially beyond the control of the affected vehicle manufacturers. It has accordingly concluded that a 1-year delay in the required date for introduction of fluid level sensors for vehicles whose GVWR exceeds 10,000 pounds would be in the public interest.

Harvester also requested a year's delay of the third effectiveness test requirements (S5.1.1.3). It stated that vehicles with 151 inches or less wheelbase and 8,000 pounds or greater GVWR will require anti-lock systems to meet the stopping distance requirements for lightly loaded vehicles, and that suitable anti-lock systems cannot be developed for 1976 model year production. The NHTSA does not consider that a year's delay of the third effectiveness test requirements is in the public interest. It finds, however, on the basis of the information before it that the

incorporation of anti-lock systems into this class of vehicles by the September 1, 1975, effective date is probably impracticable. The standard accordingly is being amended to permit, for a period of 1 year, somewhat longer stopping distance requirements for lightly loaded vehicles of 8,000 pounds or more GVWR. The NHTSA finds these distances to be achievable without anti-lock systems, and that the change for the interim period is justifiable in terms of the costs and the safety benefits involved. As an example, the maximum stopping distance permissible from 60 mph at lightly loaded vehicle weight is changed from 216 feet to 242 feet for vehicles with a GVWR between 8,000 and 10,000 pounds.

*Effectiveness requirements.* Clarifying words are again added to the effectiveness requirements and test procedures in response to various requests. Heretofore the performance requirements for vehicles with inoperative brake power assist units and brake power units specified four stops at a deceleration figure, with the fifth and final stop specified in feet. This has apparently proved confusing, and the final stop will now be expressed in a manner consistent with the remainder of the performance requirements, as "an average deceleration of not lower than 7 fpsps". This value, however, applies only to passenger cars. Ford argued that the heavy truck stopping distance values are unrealistic, in the optional procedures provided by S5.1.3.2 and S5.1.3.3 for inoperative brake power assist units and brake power units. It petitioned for less stringent values. The agency has considered that Ford's views have merit, and is amending the standard to require a final stop at an average deceleration of not lower than 6 fpsps. Table III has been amended to reflect this change.

Two petitioners contested the pedal force baseline value range of 15 to 60 pounds for the fade and recovery and water recovery demonstrations. GM asked that the minimum be reduced to 10 pounds, while Harvester requested an increase in the maximum to 88 pounds. GM submitted new test data to substantiate its request and its petition is granted; but a floor of 5 pounds is placed on the recovery minimum value. Harvester's petition is predicated on the results of "extensive tests" that show "that no vehicle over 15,000 lbs. GVWR can be brought

into compliance with this requirement for model year 1976." In recognition that even exerting its best efforts Harvester cannot comply by September 1, 1975, the NHTSA has determined that a relaxation of this requirement for two years would be in the public interest. Therefore, Harvester's petition is granted, and between September 1, 1975, and September 1, 1977, the maximum baseline pedal effort will be 90 pounds with a restriction on fade recovery of 100 pounds maximum, and of 110 pounds on water recovery.

With respect to the brake failure indicator lamp, Ford and Wagner requested clarification that the pressure failure condition is a rupture type, rather than one resulting from slow leaks. This request is granted, and S5.3.1(a) is amended to specify that the failure causing the lamp to operate is "A gross loss of pressure (such as caused by a rupture of a brake line) . . ." Wagner also asked whether an automatic reset pressure failure valve would violate the standard. When there is a slow leak in the service brake system, the warning valve will shuttle, activating the indicator lamp, but the lamp will not remain activated when the pedal is released and then reapplied. The NHTSA intends the fluid level indicator to warn of fluid loss due to slow leaks, and the pressure differential indicator to warn of gross pressure loss. The failure of the lamps to remain activated by the valve does not violate Standard No. 105-75.

Some petitioners cited an apparent conflict in the previous denial of Toyota's petition to allow an indicator lamp to remain activated when the ignition is returned to "on" after the engine is started, and the fact that some systems do not instantly deactivate. NHTSA has previously noted in the notice of September 2, 1972 (37 F.R. 17970), that no time interval is specified, and that instantaneous deactivation could not be required of continuous sensing units. The indicators considered acceptable to NHTSA are those that may remain activated for a limited time (such as 1 to 10 seconds) after the ignition is returned to "on".

Finally, Wagner petitioned for reinstatement of the limiting phrase "in any reservoir compartment" in the requirement that an indicator lamp be activated whenever there is a drop in the level of brake fluid in a master cylinder reservoir to

less than one-fourth of fluid reservoir capacity. The phrase was deleted in the notice of February 22, 1974, but it should have been retained to clarify that a low level in any reservoir compartment must be indicated. Wagner's petition is granted.

*Test conditions.* Ford requested an amendment of the test weight condition of S6.1 to clarify how, in the GVWR test condition, added weight is to be distributed, since even at lightly loaded weight on some vehicles the front axle load exceeds its proportional share of the GVWR. The clarification is now provided by adding to S6.1.1 "However, if the weight on any axle at lightly loaded vehicle weight exceeds the axle's proportional share of the gross vehicle weight rating, the load required to reach GVWR is placed so that the weight on that axle remains the same as at lightly loaded vehicle weight."

Ford also asked that S6.2 *Test loads* be revised so that the manufacturer could designate the density of the test load selected, rather than to anticipate values that may be selected from within the prescribed range in the agency's compliance testing program. This petition is denied. Ford's suggestion would result in each manufacturer setting its own unique performance requirements, and would not be appropriate for standards required by law to be uniform for the types of vehicles to which they apply. Each vehicle must comply with the requirements of the standard when loaded with materials of any density within the applicable ranges. This is made clear by the second sentence of S6., *Test conditions*: "Where a range of conditions is specified, the vehicle shall be capable of meeting the requirements at all points within the range."

GM once again petitioned for an amendment of S6.4, *Transmission selector control*, to allow stopping of the test vehicle in gear rather than neutral. Since the agency, pursuant to 49 CFR § 553.35, does not consider repetitious petitions, no action has been taken.

*Test procedures and sequence.* S7. allows automatic adjusters to be locked out prior to burnish and for the remainder of the test sequence. Girling has petitioned that lockout

should only be in accordance with manufacturer's recommendations. NHTSA agrees and is amending S7. accordingly. At the request of GM the agency has also amended S7. to outline a test procedure for conducting stops when the gear selector is required to be in the neutral position.

Girling also asked that the postburnish brake adjustment test procedure (S7.4.1.2 and S7.4.2.2) be amended to make clear that these sections do not prohibit postburnish adjustment of manually adjustable brakes. Girling is correct, and appropriate amendments are made to reflect the agency's intent.

Ford and Wagner both asked that the burnish procedure of S7.4.2.1.2 be amended in a manner consistent with Motor Vehicle Safety Standard No. 121, to allow brake applications at a point 1.5 miles from the previous brake application for vehicles unable to attain any required speed in 1 mile. The petition is granted, and the standard is amended accordingly.

Finally, Ford suggested that the test procedure for first reburnish, S7.6, be changed to reflect the optional procedure of S7.4.2.1.2, and this request has also been granted.

Other minor amendments have been made to correct printing errors and for internal consistency.

In consideration of the foregoing, 49 CFR 571.105-75, Motor Vehicle Safety Standard No. 105-75, is amended . . .

*Effective date:* September 1, 1975. Because these amendments relate to a standard that is effective September 1, 1975, it has been determined for good cause shown that an effective date later than 1 year after issuance is in the public interest.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on July 9, 1974.

James B. Gregory  
Administrator

39 F.R. 25943  
July 15, 1974



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 105-75

### Hydraulic Brake Systems

(Docket No. 70-27; Notice 13)

This notice amends Standard No. 105-75, *Hydraulic brake systems*, 40 CFR 571.105-75, as it applies to passenger cars, in response to petitions for reconsideration of amendments published July 15, 1974 (39 F.R. 25943) (Notice 11). The amendments defer for one year the requirement for a brake fluid level indicator and modify the permissible pedal force values used in recovery stops.

Manufacturers of hydraulic-braked motor vehicles responded to the Notice 11 amendments of the standard with petitions for reconsideration of specific technical changes in some performance requirements, and also with far-ranging requests for substantial modification, delay, or revocation of the standard. These broad requests are answered in a separate proposal to delay the effective date of the standard for four months in the case of passenger cars, and indefinitely in the case of multipurpose passenger vehicles (MPV's), trucks, and buses. For this reason, only the specific technical elements that necessarily affect passenger cars are addressed in this notice.

*Brake fluid level indicator.* Chrysler Corporation, Ford Motor Company, General Motors, and Wagner Electric Corporation responded to the 1-year delay in fluid level indicator requirements for heavy vehicles by asserting that procurement and reliability problems also exist for lighter vehicle categories. The NHTSA contacted several manufacturers of brake fluid level indicators and discussed the availability and reliability of their products. It appeared that further field evaluation of available indicators could improve their reliability and that some delay should solve the availability problems which existed. At the February 11 public meeting, American Motors Corporation confirmed that availability problems

still exist for brake fluid level indicators. Consequently, the NHTSA amends the standard to defer requirements for brake fluid level indicators until September 1, 1976.

International Harvester requested clarification in the wording of S5.3.1(b), which appears to require a signal if the amount of brake fluid in a small, nearly full compartment of a split system reservoir does not equal one-quarter of the volume of the larger compartment. The NHTSA agrees that confusion may arise from the present wording, and, without changing the intended meaning of the requirement in any way, amends the wording as requested by Harvester.

Ford requested a clarification of wording in S5.3.1(a), which presently calls for a signal when "any" one of several pressure losses is experienced. Ford correctly notes that the NHTSA use of "any" means that the vehicle or system must be capable of meeting the specified requirement upon the occurrence of every condition listed, and that, in this case, such was not intended. The NHTSA has corrected the wording to make clear that only one of the conditions (at the option of the manufacturer) must be indicated by the brake system indicator lamp.

*Maximum and minimum brake pedal force—recovery stops.* Chrysler and the Japan Automobile Manufacturers Association (JAMA) supported the Notice 11 reduction of baseline pedal force limits to permit optimization of braking characteristics over the whole range of system operating conditions. Their petitions argued for an additional change to the minimum pedal effort in the first through fourth recovery stops to encourage optimal recovery characteristics. Specifically, Chrysler recommended that the present 15-pound limit (S6.1.13) on minimum

pedal force in the early recovery stops be replaced by a formula tied to the average control force for the baseline check. To avoid over-sensitive brakes, a minimum pedal force of five pounds would be required.

The NHTSA concludes that such a requirement would allow greater design freedom in optimizing brake recovery without sacrificing limits on brake sensitivity. Accordingly, the NHTSA reconsiders its action on minimum brake control force requirements, and amends the standard in response to JAMA and Chrysler.

Chrysler also raised the issue of maximum allowable pedal force in the fifth stop of the water recovery requirements. Presently this pedal force can be a maximum of 90 pounds (60 pounds for average control force in the baseline check plus 30 pounds), but this formula requires lower pedal force on a vehicle with lower average baseline pedal force. Chrysler has considered changes in brake lining to lower the wet recovery stop values, but the modifications include major disadvantages such as increased brake imbalance, larger boosters, noise, and wear. The NHTSA finds that the formula can be revised to avoid penalizing good baseline performance, while maintaining a 90-pound maximum effort. Accordingly, S5.1.2.5 is amended to permit a 45-pound increase of pedal effort, as long as the maximum effort does not exceed 90 pounds.

*Other requirements of the standard.* Wagner requested that the Notice 11 revisions of "in neutral" procedures be made consistent with other provisions of the standard, or that they be replaced with other procedures. The NHTSA finds the present procedure more reproducible than that suggested by Wagner and therefore denies this petition. Wagner correctly pointed out that the procedure to "exceed the test speed by approximately seven mph" may contradict the requirement of testing at speeds only four mph lower than maximum attainable speeds (S5.1). Accordingly, "four to eight mph" is substituted for "approximately seven mph" in S7.

In a related area, JAMA requested that the test procedure for wet brake recovery stops be modified (S7.16.2). The NHTSA did not address these procedures in Notice 11, and does not find that this new subject matter is appropriate for consideration at this time. The JAMA petition will be considered as a petition for rule-making which will be addressed in the near future.

Bendix requested clarification of the Notice 8 preamble discussion of "power assist" and "power" units. Bendix's question arose with regard to its "hydro-boost" unit, which is described as designed with a "push through" capability in both the "normal" and "failed power" operating conditions, and with an accumulator that permits low pedal effort for a limited number of brake applications after a power failure has occurred. The NHTSA concludes that, because the Bendix "hydro-boost" does not prevent the operator from braking the vehicle by an application of muscular force in the "failed power" condition, it qualifies as a brake power assist unit under the definitions of Standard No. 105-75.

Several minor amendments have been made to correct a printing error in Table I as it appeared in Notice 8 (38 F.R. 13017, May 18, 1973) and for consistency in the use of abbreviations and terminology.

In consideration of the foregoing, Standard No. 105-75 (49 CFR 571.105-75) is amended. . . .

*Effective date:* September 1, 1975: Because the amendments relax a requirement and because the present effective date of the standard is September 1, 1975, it is found for good cause shown that an effective date sooner than 180 days following publication of the amendments in the *Federal Register* is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51)

Issued on March 6, 1975.

Noel C. Bufe  
Acting Administrator  
**40 F.R. 11584**  
**March 12, 1975**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 105-75

### Hydraulic Brake Systems

(Docket No. 70-27; Notice 14)

This notice amends Standard No. 105-75, *Hydraulic brake systems*, 49 CFR 571.105-75, to make it applicable only to passenger cars equipped with hydraulic brake systems. This amendment has the effect of withdrawing the standard's applicability to multipurpose passenger vehicles (MPV's), trucks, and buses equipped with hydraulic brake systems.

The National Highway Traffic Safety Administration (NHTSA) proposed a 4-month delay of the standard as it applies to passenger cars and indefinite delay as it applies to other hydraulic-braked vehicles (40 FR 10483, March 6, 1975). Manufacturers responded to the proposed 4-month delay for passenger cars with objections to technical features of the standard, the costs of mid-year changes, and the NHTSA's estimate of the standard's safety benefits. While consideration of these issues continues, a decision has been made to withdraw the standard's applicability to trucks, buses, and MPV's.

The NHTSA proposed withdrawal of the standard because of uncertainty that the particular performance levels established for trucks, MPV's, and buses by Standard No. 105-75 were justified in view of their costs. It is clear that truck braking is in many cases substantially poorer than passenger car braking, and that the generally longer stopping distances and the greater severity of truck accidents justify a safety standard for these vehicles. At the same time, the costs of meeting Standard No. 105-75 in all truck, bus, and MPV model lines are substantial and the NHTSA is not prepared to conclude that they are justified in view of achievable safety benefits.

The Center for Auto Safety (CFAS) questioned the NHTSA's right to propose withdrawal of a promulgated rule in response to manufacturer cost objections without publication of the agency's evaluation of the submitted cost data. As authority, CFAS cites the newly-enacted cost information provisions of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. § 1402).

In this case manufacturers submitted costs for light- to medium-duty trucks that ranged from \$54 to \$775 per unit (depending on model configuration) to attain compliance with the standard. The NHTSA compared these figures with independently-gathered detailed cost and mark-up information and substantiated that the manufacturer's estimates were accurate. This material has been formally compiled as required by the Act and has been made public in the docket (70-27; Notice 12).

CFAS, the Consumers Union, Ms. Susan P. Baker of Johns Hopkins University, the Insurance Institute for Highway Safety, and the Permanente Medical Group stressed the importance of a brake standard for these vehicles. The NHTSA agrees and intends to issue interim requirements for MPV's, trucks, and buses equipped with hydraulic brake systems. However, the NHTSA concludes that the Standard 105-75 requirements in their present form cannot be justified for trucks, buses, and MPV's on the basis of the data available at this time.

In consideration of the foregoing, Standard No. 105-75 (49 CFR 571.105-75) is amended . . .

*Effective date:* September 1, 1975. Because the effective date of the standard for trucks, buses, and MPV's was less than 180 days after the date of publication of this amendment in the

Effective: September 1, 1975

*Federal Register*, it is found for good cause shown that an effective date less than 180 days from the date of publication is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51).

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Issued on April 25, 1975.

James B. Gregory  
Administrator

**40 F.R. 18411**  
**April 28, 1975**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 105-75

### Hydraulic Brake Systems

(Docket No. 70-27; Notice 15)

This notice amends Standard No. 105-75, *Hydraulic brake systems*, 49 CFR 571.105-75, to delay its effective date four months from September 1, 1975, to January 1, 1976, and to establish interim control force values for water recovery testing. This notice also amends the present hydraulic brake system standard for passenger cars (Standard No. 105, *Hydraulic brake systems*, (49 CFR 571.105)) to permit compliance with that standard or the new standard at the option of the manufacturer until January 1, 1976.

As issued, Standard No. 105-75 applied to passenger cars, trucks, buses, and multipurpose passenger vehicles (MPV's) equipped with hydraulic brake systems. Its scheduled effective date was September 1, 1975. Thirteen petitions for rulemaking to postpone or revoke the standard were filed with the NHTSA earlier this year. Following a comprehensive evaluation of the petitions, the NHTSA proposed and made final an indefinite delay of the standard as it applied to trucks, buses, and MPV's (40 F.R. 10483, March 6, 1975; 40 F.R. 18411, April 28, 1975).

At the same time, the agency denied petitions for substantial postponement or revocation of the standard as it applies to passenger cars, having considered the cost of compliance for those vehicles, and having determined that significant safety benefit will derive from better stopping performance, stability, and pedal force levels (40 F.R. 10483, March 6, 1975). A discussion of the potential benefits accompanied that decision. An economic evaluation of the impact of the standard will be available in the public docket. The only revisions of the standard proposed by the NHTSA were an interim pedal force value and a 4-month delay of effective date, to permit some flexibility in new model introduction dates where technical

changes or isolated compliance problems had not been resolved.

Manufacturer comments on the proposal were generally unresponsive to the proposed delay of four months and the interim pedal force value of 110 pounds in wet recovery stops. The Vehicle Equipment Safety Commission considered the proposed pedal force values to be overgenerous. Chrysler Corporation indicated its support for the 4-month delay and interim value but emphasized other arguments in its submission. General Motors requested that the pedal force value be made permanent. It appears that manufacturers support the short delay and pedal force modification to simplify introduction of the 1976 models. Accordingly, the standard is modified as proposed, to establish an amended effective date of January 1, 1976, and a pedal force increase of 60 pounds up to a total of 110 pounds (in S5.1.5.2) until September 1, 1976.

The majority of comments restated manufacturer positions on the issue of substantial delay or revocation of the standard for passenger cars. The NHTSA has already considered this issue and, as noted above, concluded that the benefits of improved stopping performance, stability, and pedal force values outweigh the costs of implementation. Manufacturers submitted no new data that would justify a reversal of NHTSA's earlier decision.

Although the NHTSA limited its proposal to a choice between the effective dates of September 1, 1975, and January 1, 1976, several manufacturers compared the cost savings of a short delay to January 1, 1976, with a substantially longer delay to September 1, 1976. Actually, the January 1 date was proposed in order to ease the introduction of new models after September 1,

1975, and was not proposed as a means of reducing costs. The proposal was largely in response to manufacturers' comments that some 1976 models would be introduced substantially later than normal so that 1975 model production might be extended beyond September 1, 1975. The NHTSA believes that the three years of lead-time since promulgation of Standard No. 105-75 have been sufficient to permit the design and testing of complying brake systems in nearly all cases. With the 4-month transitional period, a manufacturer will be free to introduce the new brake systems along with its new model introduction, as dictated by the economic situation of the automotive industry.

Ford and Chrysler suggested that the standard could be improved by reduced loading during brake fade testing. These companies argue that present-day brake balance must be modified to meet the brake-fade and fourth effectiveness test of Standard No. 105-75 and that the new balance is not optimum. Agency testing demonstrates that many present-day vehicles can in fact meet the requirements as their brakes are balanced and suggests that major departures from current brake balance design will generally not be re-

quired to comply with fade requirements under the present test conditions. The NHTSA accordingly concludes that the presently-specified loading does not result in characteristics which would justify delay of the standard and the consequent loss of benefits during the period of delay.

In consideration of the foregoing, Standard No. 105-75 (49 CFR 571.105-75) is amended. . . .

*Effective date:* The date on which Standard No. 105-75 becomes mandatory for all passenger cars is January 1, 1976. However, the effective date of the amendments to both Standard No. 105-75 and Standard No. 105 is June 9, 1975, and passenger cars manufactured between that date and January 1, 1976, may conform to either standard at the discretion of the manufacturer.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on June 5, 1975.

James B. Gregory  
Administrator

**40 F.R. 24525**  
**June 9, 1975**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 105-75

### Hydraulic Brake Systems

(Docket No. 70-27; Notice 16)

This notice responds to three petitions for reconsideration of recent amendments of Standard No. 105-75, *Hydraulic brake systems*, 49 CFR 571.105-75 (40 F.R. 11584, March 12, 1975) (Notice 13). The petitions requested clarification of new language that specifies minimum control force application values (S5.1.4.3(a)(2) and S5.1.5.2(a)(2)) and objected to the NHTSA decision to defer for 1 year the requirement for a brake fluid level indicator in passenger cars.

Wagner Electric Corporation requested clarification of the description of minimum permissible control force application value, which reads, "A minimum of 10 pounds or 40 percent (whichever is greater) less than the average control force for the baseline check (but in no case less than 5 pounds)." Starting with a baseline value, the manufacturer must utilize the lower of two values which result when different amounts are subtracted from the baseline value. Because there is some ambiguity in the language used to describe these calculations, the NHTSA hereby revises the language to improve its clarity. The new wording in no way modifies the meaning of S5.1.4.3(a)(2) and S5.1.5.2(a)(2).

Ford Motor Company, Wagner, and Mercedes-Benz requested reconsideration of the decision to defer for 1 year the requirement of S5.3.1(b) that specifies a brake fluid level indicator. Ford and Wagner requested that the indicator be permanently deleted from the requirements in view of expense and reliability problems, claiming that its function is adequately served by the pressure differential warning that is also required by the standard.

The fluid level indicator detects and signals a loss of fluid from the system, whether the loss is swift or gradual. In the event of such a dan-

gerous condition, the vehicle operator is warned early that braking function will be lost in the future. Unlike the pressure differential indicator, the fluid level indicator warns the operator before one subsystem is effectively depleted of all fluid, and permits a repair to be undertaken before braking is lost. The indicator would also signal leakage at a wheel cylinder which could contaminate brake linings and create a side-to-side imbalance in braking.

At the same time, the petitions raise questions about the reliability, availability, and cost of these devices that cannot be answered without further data. The NHTSA is in the process of gathering these data, and for this reason is unable to respond to these two petitions within the 120-day period established for actions on petitions for reconsideration. The NHTSA anticipates publication of its response no later than October 31, 1975.

Mercedes-Benz argued that the 1-year deferral of the brake fluid level indicator discriminated against those manufacturers who presently provide such a device to meet the present Standard No. 105 (49 CFR 571.105). As interpreted, Standard No. 105 specifies a pressure differential indicator (used by most manufacturers) or a fluid level indicator (used by Mercedes) to signal a complete hydraulic-type failure of a partial system. Mercedes asked that the new standard be modified to continue this manufacturer option until both systems are required, reasoning that either system provides an equal safety benefit.

As noted in the earlier discussion, a review of the benefits found in one warning indicator that are not found in the other demonstrates that there are separate and significant benefits in each warning. The new hydraulic brake standard

specifies both warnings for this reason. The fluid level indicator was deferred only because of unresolved reliability and availability issues. The pressure differential indicator is a proven and available device which can be incorporated in vehicles at reasonable cost. While the NHTSA does not wish to encourage removal of Mercedes' fluid level indicator, it has decided that all passenger cars should be equipped with the pressure differential indicator. For these reasons, Mercedes' petition is denied.

In an area unrelated to the rulemaking which underlies this response to petitions for reconsideration, Toyota Motor Sales, Inc., has requested confirmation that S5.3.2 of the standard requires a check of the brake system indicator lamp function only when the transmission shift lever is in the "P" (park) or "N" (neutral) position (in the case of vehicles with automatic transmission). The literal wording of S5.3.2 requires a check of lamp function without regard to the position of the transmission shift lever, whenever the ignition switch is turned to the "on" position when the engine is not running, or when the ignition switch is in a position between "on" and "start" that is designated by the manufacturer as a check position. In the case of vehicles with an automatic transmission, however, this wording does not reflect the NHTSA's intent with

respect to the check function. To properly reflect this intent, the language of S5.3.2 is hereby modified in accordance with Toyota's request. This is an interpretative ruling, adding no additional burden on any person, concerning which the NHTSA finds that notice and opportunity for comment are unnecessary, under provisions of the Administrative Procedures Act (5 U.S.C. § 553(b)(3)(A)).

In a separate area, the date of September 1, 1975, appearing in S7.4.2.1 of the standard is changed to January 1, 1976, to conform to the standard's new effective date.

In consideration of the foregoing, Standard No. 105-75 (49 CFR 571.105-75) is amended...

*Effective date:* September 17, 1975. Because this amendment relieves a restriction and imposes no additional burden on any person, it is found for good cause shown that an immediate effective date is in the public interest.

(Sec. 103, 119 Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on September 11, 1975.

James B. Gregory  
Administrator

**40 F.R. 42872**  
**September 17, 1975**

## MOTOR VEHICLE SAFETY STANDARD NO. 105-75

### Hydraulic Brake Systems

**51. Scope.** This standard specifies requirements for hydraulic service brake and associated parking brake systems.

**52. Purpose.** The purpose of this standard is to insure safe braking performance under normal and emergency conditions.

**53. Application.** [This standard applies to passenger cars equipped with hydraulic service brake systems, and to school buses manufactured on and after October 12, 1976, with hydraulic service brake systems. (41 F.R. 2391—January 16, 1976. Effective: 10/12/76)]

**54. Definitions.** “Antilock system” means a portion of a service brake system that automatically controls the degree of rotational wheel slip at one or more road wheels of the vehicle during braking.

[“Backup system” means a portion of a service brake system, such as a pump, that supplies energy, in the event of a primary brake power source failure. (39 F.R. 6708—February 22, 1974.)]

“Brake power assist unit” means a device installed in a hydraulic brake system that reduces the operator effort required to actuate the system, and that if inoperative does not prevent the operator from braking the vehicle by a continued application of muscular force on the service brake control.

“Brake power unit” means a device installed in a brake system that provides the energy required to actuate the brakes, either directly or indirectly through an auxiliary device, with the operator action consisting only of modulating the energy application level.

“Hydraulic brake system” means a system that uses hydraulic fluid as a medium for transmitting force from a service brake control to the

service brake, and that may incorporate a brake power assist unit, or a brake power unit.

“Initial brake temperature” means the average temperature of the service brakes on the hottest axle of the vehicle 0.2 mile before any brake application.

“Lightly loaded vehicle weight” means:

(a) for vehicles with a GVWR of 10,000 pounds or less, unloaded vehicle weight plus 300 pounds (including driver and instrumentation);

(b) for vehicles with a GVWR greater than 10,000 pounds, unloaded vehicle weight plus 500 pounds (including driver and instrumentation).

“Parking mechanism” means a component or subsystem of the drive train that locks the drive train when the transmission control is placed in a parking or other gear position and the ignition key is removed.

“Pressure component” means a brake system component that contains the brake system fluid and controls or senses the fluid pressure.

“Skid number” means the frictional resistance of a pavement measured in accordance with American Society for Testing and Materials Method E-274-65T at 40 mph, omitting water delivery as specified in paragraph 7.1 of that method.

“Snub” means the braking deceleration of a vehicle from a higher reference speed to a lower reference speed that is greater than zero.

“Speed attainable in 2 miles” means the speed attainable by accelerating at maximum rate from a standing start for 2 miles on a level surface.

“Spike stop” means a stop resulting from the application of 200 pounds of force on the service brake control in 0.08 second.

“Split service brake system” means a brake system consisting of two or more subsystems actuated by a single control designed so that a leakage-type failure of a pressure component in a single subsystem (except structural failure of a housing that is common to two or more subsystems) shall not impair the operation of any other subsystem.

“Stopping distance” means the distance traveled by a vehicle from the point of application of force to the brake control to the point at which the vehicle reaches a full stop.

“Variable proportioning brake system” means a system that automatically adjusts the braking force at the axles to compensate for vehicle static axle loading and/or dynamic weight transfer between axles during deceleration.

**55. Requirements.**

**55.1 Service brake system.** [Each vehicle shall be capable of meeting the requirements of S5.1.1 through S5.1.6, under the conditions specified in S6, when tested according to the procedures and in the sequence set forth in S7. Except as noted in S5.1.1.2 and S5.1.1.4, if a vehicle is incapable of attaining a speed specified in S5.1.1, S5.1.2, S5.1.3, or S5.1.6, its service brakes shall be capable of stopping the vehicle from the multiple of 5 mph that is 4 mph to 8 mph less than the speed attainable in 2 miles, within distances that do not exceed the corresponding distances specified in Table II. If a vehicle is incapable of attaining a speed specified in S5.1.4 in the time or distance interval set forth, it shall be tested at the highest speed attainable in the time or distance interval specified. (40 F.R. 47789—October 10, 1975. Effective: 10/10/75)]

**55.1.1 Stopping distance.** The service brakes shall be capable of stopping each vehicle in four effectiveness tests within the distances, and from the speeds specified below.

**55.1.1.1** In the first (preburnished) effectiveness test, the vehicle shall be capable of stopping from 30 mph and 60 mph within the corresponding distances specified in Column I of Table II.

**55.1.1.2** [In the second effectiveness test, the vehicle shall be capable of stopping from 30 and 60 mph within the corresponding distances

specified in Column II of Table II. If the speed attainable in 2 miles is not less than 84 mph, a passenger car shall also be capable of stopping from 80 mph within the corresponding distance specified in Column II of Table II. (41 F.R. 2391—January 16, 1976. Effective: 10/12/76)]

**55.1.1.3** [In the third effectiveness test the vehicle shall be capable of stopping at lightly loaded vehicle weight from 60 mph within the corresponding distance specified in Column III of Table II. (41 F.R. 2391—January 16, 1976. Effective: 10/12/76)]

**55.1.1.4** [In the fourth effectiveness test, a vehicle with a GVWR of 10,000 pounds or less shall be capable of stopping from 30 and 60 mph within the corresponding distances specified in Column I of Table II. If the speed attainable in 2 miles is not less than 84 mph, a passenger car shall also be capable of stopping from 80 mph within the corresponding distance specified in Column I of Table II.

If the speed attainable in 2 miles is not less than 99 mph, a passenger car shall, in addition, be capable of stopping from the applicable speed indicated below, within the corresponding distance specified in Column I of Table II. (41 F.R. 2391—January 16, 1976. Effective: 10/12/76)]

<i>Speed attainable in 2 miles (mph)</i>	<i>Required to stop from (mph)</i>
not less than 99 but less than 104	95
104 or more	100

**55.1.2 Partial failure.**

**[55.1.2.1** In vehicles manufactured with a split service brake system, in the event of a rupture or leakage type of failure in a single subsystem, other than a structural failure of a housing that is common to two or more subsystems, the remaining portion(s) of the service brake system shall continue to operate and shall be capable of stopping a vehicle from 60 mph within the corresponding distance specified in Column IV of Table II.

**55.1.2.2** In vehicles not manufactured with a split service brake system, in the event of any one rupture or leakage type of failure in any component of the service brake system the vehicle shall, by operation of the service brake

TABLE I—BRAKE TEST PROCEDURE SEQUENCE AND REQUIREMENTS

No.	Sequence	Test Load		Test Procedure	Requirements
		Light	GVWR		
1.	Instrumentation check.....	—	—	S7.2	—
2.	First (preburnish) effectiveness test.....	—	x	S7.3	S5.1.1.1
3.	Burnish procedure.....	—	x	S7.4	—
4.	Second effectiveness.....	—	x	S7.5	S5.1.1.2
5.	First reburnish.....	—	x	S7.6	—
6.	Parking brake.....	x	x	S7.7	S5.2
7.	Third effectiveness (lightly loaded vehicle).....	x	—	S7.8	S5.1.1.3
8.	Partial failure.....	x	x	S7.9	S5.1.2
9.	Inoperative brake power and power assist units.....	—	x	S7.10	S5.1.3
10.	First fade and recovery.....	—	x	S7.11	S5.1.4
11.	Second reburnish.....	—	x	S7.12	—
12.	Second fade and recovery.....	—	x	S7.13	S5.1.4
13.	Third reburnish.....	—	x	S7.14	—
14.	Fourth effectiveness.....	—	x	S7.15	S5.1.1.4
15.	Water recovery.....	—	x	S7.16	S5.1.5
16.	Spike stops.....	—	x	S7.17	S5.1.6
17.	Final inspection.....	—	—	S7.18	S5.6
18.	Moving barrier test.....	—	x	S7.19	S5.2.2.3

control, be capable of stopping 10 times consecutively from 60 mph within the corresponding distance specified in Column IV of Table II. (40 F.R. 47789—October 10, 1975. Effective: 10/10/75)】

**S5.1.3 Inoperative brake power assist unit or brake power unit.** 【A passenger car equipped with one or more brake power assist units shall meet the requirements of either S5.1.3.1, S5.1.3.2, or S5.1.3.4 (chosen at the option of the manufacturer), and a passenger car equipped with one or more brake power units shall meet the requirements of either S5.1.3.1, S5.1.3.3, or S5.1.3.4 (chosen at the option of the manufacturer). A vehicle other than a passenger car shall meet the requirements of S5.1.3.1. (41 F.R. 2391—January 16, 1976. Effective: 10/12/76)】

**S5.1.3.1** The service brakes on a vehicle equipped with one or more brake power assist units or brake power units, with one such unit inoperative and depleted of all reserve capability, shall be capable of stopping a vehicle from 60 mph within the corresponding distance specified in Column IV of Table II.

**S5.1.3.2 Brake power assist units.** The service brakes on a vehicle equipped with one or more

brake power assist units, with one such unit inoperative, shall be capable of stopping a vehicle from 60 mph—

(a) In six consecutive stops at an average deceleration for each stop that is not lower than that specified in Column I of Table III, when the inoperative unit is not initially depleted of all reserve capability; and

(b) 【In a final stop, at an average deceleration that is not lower than 7 fpsps (equivalent stopping distance 554 feet) when the inoperative unit is depleted of all reserve capability. (41 F.R. 2391—January 16, 1976. Effective: 10/12/76)】

**S5.1.3.3 Brake power units.** 【The service brakes of a vehicle equipped with one or more brake power units with an accumulator-type reserve system, with any one failure in any one unit, shall be capable of stopping the vehicle from 60 mph, (40 F.R. 47789—October 10, 1975. Effective: 10/10/75)】

(a) In 10 consecutive stops at an average deceleration for each stop that is not lower than that specified in Column II of Table III, when the unit is not initially depleted of all reserve capability; and

TABLE II—STOPPING DISTANCES

VEHICLE TEST SPEED, MPH	STOPPING DISTANCE IN FEET FOR TESTS INDICATED											
	I			II			III			IV		
	1st (Preburnish) and 4th Effectiveness; Spike Effectiveness Check			2nd Effectiveness			3rd (Lightly Loaded Vehicle) Effectiveness			Inoperative Brake Power and Power Assist Unit; Partial Failure		
	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)
30	57*	69 <sup>1st</sup> * 65 <sup>4th</sup> *	88*	54*	65*	81*	51	65	81	114	194	218
35	74	110	132	70	110	132	67	110	132	155	264	312
40	96	144	173	91	144	173	87	144	173	202	345	388
45	121	182	218	115	182	218	110	182	218	257	436	490
50	150	225	264	142	225	264	135	225	264	317	538	605
55	181	272	326	172	272	326	163	272	326	383	651	732
60	216*	323*	388*	204*	323*	388*	194*	323*	388*	456*	775*	872*
80	405*	N.A.	N.A.	383*	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
95	607	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
100	673	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

\* Distances for specified tests.

N.A. Not Applicable.

(a) Passenger cars

(b) Vehicles other than passenger cars with GVWR of 10,000 pounds or less.

(c) Vehicles other than passenger cars with GVWR greater than 10,000 pounds.

【(41 F.R. 2391—January 16, 1976. Effective: 10/12/76)】

TABLE III—INOPERATIVE BRAKE POWER ASSIST AND BRAKE POWER UNITS

(Passenger Cars)

Stop. No	Average Deceleration, FPSPS		Equivalent Stopping Distance, Feet	
	Column 1 Brake Power Assist	Column 2 Brake Power Unit	Column 3 Brake Power Assist	Column 4 Brake Power Unit
1.	16	16	242	242
2.	12	13	323	298
3.	10	12	388	323
4.	9	11	431	352
5.	8	10	484	388
6.	7.5	9.5	517	409
7.	(Depleted) 7.0	9.0	554	431
8.	N.A.	8.5	N.A.	456
9.	N.A.	8.0	N.A.	484
10.	N.A.	7.5	N.A.	517
11.	N.A.	(Depleted) 7.0	N.A.	554

【(41 F.R. 2391—January 16, 1976. Effective: 10/12/76)】

(equivalent stopping distance 646 feet), as applicable, when the inoperative unit is depleted of all reserve capability. (39 F.R. 25944—July 15, 1974)】

**55.1.3.4 Brake power assist and brake power units.** 【The service brake of a vehicle equipped with one or more brake power assist units or brake power units with a backup system, with one brake power assist unit or brake power unit inoperative and depleted of all reserve capability and with only the backup system operating in the failed subsystem, shall be capable of stopping the vehicle from 60 mph in 15 consecutive stops at an average deceleration for each stop that is not lower than 12 fpsps (equivalent stopping distance 323 feet). (40 F.R. 11584—March 12, 1975. Effective: 9/1/75)】

**55.1.4 Fade and recovery.** The service brakes shall be capable of stopping each vehicle in two fade and recovery tests as specified below.

**55.1.4.1** 【The control force used for the baseline check stops or snubs shall be not less than 10 pounds, nor more than 60 pounds, except that the control force for a vehicle with a GVWR of 15,000 pounds or more manufactured between September 1, 1975, and September 1, 1977, may be between 10 and 90 pounds. (39 F.R. 25944—July 15, 1974)】

**55.1.4.2** 【(a) Each vehicle with GVWR of 10,000 pounds or less shall be capable of making five fade stops (10 fade stops on the second test) from 60 mph at a deceleration not lower than 15 ft/s/s for each stop, followed by five fade stops at the maximum deceleration attainable from 5 to 15 ft/s/s. (39 F.R. 6708—February 22, 1974.)】

(b) Each vehicle with a GVWR greater than 10,000 pounds shall be capable of making 10 fade snubs (20 fade snubs on the second test) from 40 mph to 20 mph at 10 fpsps for each snub.

**55.1.4.3(a)** 【Each vehicle with a GVWR of 10,000 pounds or less shall be capable of making five recovery stops from 30 mph at ten fpsps for each stop, with a control force application that falls within the following maximum and minimum limits:

(1) A maximum for the first four recovery stops of 150 pounds, and for the fifth stop, of

20 pounds more than the average control force for the baseline check; and

(2) 【A minimum of—

(a) The average control force for the baseline check minus 10 pounds, or

(b) The average control force for the baseline check times 0.60,

whichever result is lower (but in no case lower than 5 pounds). (40 F.R. 42872—September 17, 1975. Effective: 9/17/75)】

(b) Each vehicle with a GVWR between 10,000 pounds and 15,000 pounds, and each vehicle with a GVWR greater than 15,000 pounds manufactured on and after September 1, 1977, shall be capable of making five recovery snubs from 40 mph to 20 mph at 10 fpsps for each snub, with a control force for the fifth snub that is within plus 20 pounds and the greater of minus 10 pounds or minus 40 percent (but not less than 5 pounds) of the average control force for the baseline check.

(c) Each vehicle with a GVWR greater than 15,000 pounds manufactured between September 1, 1975 and September 1, 1977, shall be capable of making five recovery snubs from 40 mph to 20 mph at 10 fpsps for each snub, with a control force for the fifth snub that is within the lesser of plus 20 pounds of the average control force for the baseline check or 100 pounds, and the greater of minus 10 pounds or minus 40 per cent (but not less than 5 pounds) of the average control force for the baseline check. (39 F.R. 25944—July 15, 1974)】

**55.1.5 Water recovery.** The service brakes shall be capable of stopping each vehicle in a water recovery test, as specified below.

**55.1.5.1** 【The control force used for the baseline check stops or snubs shall be not less than 10 pounds, nor more than 60 pounds, except that the control force for a vehicle with a GVWR of 15,000 pounds or more manufactured between September 1, 1975, and September 1, 1977, may be between 10 and 90 pounds. (39 F.R. 25944—July 15, 1974)】

**55.1.5.2(a)** 【Except as provided in paragraph (b), after being driven for two minutes at a speed of five mph in any combination of forward and reverse directions through a trough having a water depth of six inches, each vehicle shall be

capable of making five recovery stops from 30 mph at ten fpsps for each stop with a control force application that falls within the following maximum and minimum limits:

(1) A maximum for the first four recovery stops of 150 pounds, and for the fifth stop, of 45 pounds more than the average control force for the baseline check (but in no case more than 90 pounds); and

(2) [A minimum of—

(a) The average control force for the baseline check minus 10 pounds, or

(b) The average control force for the baseline check times 0.60,

whichever result is lower (but in no case lower than 5 pounds). (40 F.R. 42872—September 17, 1975. Effective: 9/17/75)]

[However, the maximum control force for the fifth stop in the case of a vehicle manufactured before September 1, 1976, shall be not more than plus 60 pounds of the average control force for the baseline check (but in no case more than 110 pounds). (40 F.R. 24524—June 9, 1975. Effective: 6/9/75)]

[ (b) Each vehicle with a GVWR greater than 15,000 pounds manufactured between September 1, 1975, and September 1, 1977, after being driven for 2 minutes at a speed of 5 mph in any combination of forward and reverse directions through a trough having a water depth of 6 inches, shall be capable of making five recovery stops from 30 mph at 10 fpsps for each stop with a control force for the fifth recovery stop that is within the lesser of plus 30 pounds of the average control force for the baseline check or 110 pounds, and the greater of minus 10 pounds or minus 40 percent (but not less than 5 pounds) of the average control force for the baseline check. (39 F.R. 25945—July 15, 1974)]

**55.1.6 Spike stops.** Each vehicle shall be capable of making 10 spike stops from 30 mph followed by 6 effectiveness (check) stops from 60 mph, at least one of which shall be within a corresponding stopping distance specified in Column I of Table II.

**55.2 Parking brake system.** Each vehicle shall be manufactured with a parking brake system of a friction type with a solely mechanical means to retain engagement, which shall under the con-

ditions of S6, when tested according to the procedures specified in S7, meet the requirements specified in S5.2.1, S5.2.2, or S5.2.3 as applicable, when the system is engaged with a force applied to the control not to exceed 125 pounds for a foot-operated system and 90 pounds for a hand-operated system.

**55.2.1** Except as provided in S5.2.2, the parking brake system on each passenger car, and on each multipurpose passenger vehicle, truck or bus, with a GVWR of 10,000 pounds or less, shall be capable of holding the vehicle stationary (to the limit of traction of the braked wheels) for 5 minutes, in both a forward and reverse direction on a 30 percent grade.

**55.2.2** A vehicle of a type described in S5.2.1 at the option of the manufacturer may meet the requirements of S5.2.2.1, S5.2.2.2, and S5.2.2.3 instead of the requirements of S5.2.1 if:

(a) The vehicle has a transmission or transmission control which incorporates a parking mechanism, and

(b) The parking mechanism must be engaged before the ignition key can be removed.

**55.2.2.1** The vehicle's parking brake and parking mechanism, when both are engaged, shall be capable of holding the vehicle stationary (to the limit of traction of the braked wheels) for 5 minutes, in both forward and reverse directions, on a 30 percent grade.

**55.2.2.2** The vehicle's parking brake, with the parking mechanism not engaged, shall be capable of holding the vehicle stationary for 5 minutes, in both forward and reverse directions, on a 20 percent grade.

**55.2.2.3** With the parking mechanism engaged and the parking brake not engaged, the parking mechanism shall not disengage or fracture in a manner permitting vehicle movement, when the vehicle is impacted at each end, on a level surface, by a barrier moving at 2½ mph.

**55.2.3** The parking brake system on each multipurpose passenger vehicle, truck, or bus, with a GVWR greater than 10,000 pounds, shall be capable of holding the vehicle stationary for 5 minutes, in both forward and reverse directions, on a 20 percent grade.

**55.3 Brake system indicator lamp.** Each vehicle shall have one or more brake system indi-

indicator lamps, mounted in front of and in clear view of the driver, which meet the requirements of S5.3.1 through S5.3.5.

**S5.3.1** An indicator lamp shall be activated when the ignition (start) switch is in the "on" ("run") position and whenever any of the following conditions occur:

(a) **[A gross loss of pressure (such as caused by rupture of a brake line but not by a structural failure of a housing that is common to two or more subsystems) due to one of the following conditions (chosen at the option of the manufacturer): (40 F.R. 11584—March 12, 1975. Effective: 9/1/75)]**

(1) Before or upon application of a differential pressure of not more than 225 lb/in<sup>2</sup> between the active and failed brake system measured at a master cylinder outlet or a slave cylinder outlet.

(2) Before or upon application of 50 pounds of control force upon a fully manual service brake.

(3) Before or upon application of 25 pounds of control force upon a service brake with a brake power assist unit.

(4) When the supply pressure in a brake power unit drops to a level not less than one-half of the normal system pressure. (39 F.R. 6708—February 22, 1974.)

(b) **[A drop in the level of brake fluid in any master cylinder reservoir compartment to less than the recommended safe level specified by the manufacturer or to one-fourth of the fluid capacity of that reservoir compartment, whichever is greater. (40 F.R. 11584—March 12, 1975. Effective: 9/1/75)]**

(c) A total functional electrical failure in an antilock or variable proportioning brake system.

(d) Application of the parking brake.

**[A vehicle manufactured before September 1, 1976, need not meet the requirements of subparagraph (b). (40 F.R. 11584—March 12, 1975. Effective: 9/1/75)]**

**S5.3.2** **[All indicator lamps shall be activated as a check of lamp function either when the ignition (start) switch is turned to the "on" ("run") position when the engine is not running,**

or when the ignition (start) switch is in a position between "on" ("run") and "start" that is designated by the manufacturer as a check position. However, in vehicles equipped with an automatic transmission, the activation as a check of lamp function is not required when the transmission shift lever is in a forward or reverse drive position. (40 F.R. 42872—September 17, 1975. Effective: 9/17/75)]

**S5.3.3** Each indicator lamp activated due to a condition specified in S5.3.1 shall remain activated as long as the condition exists, whenever the ignition (start) switch is in the "on" ("run") position, whether or not the engine is running.

**S5.3.4** When an indicator lamp is activated it may be steady burning or flashing.

**S5.3.5** **[Each indicator lamp shall have a lens labeled in letters not less than one-eighth inch high, which shall be legible to the driver in daylight when lighted. The lens and the letters shall have contrasting colors, one of which is red. If a single common indicator is used, the lens shall be labeled "Brake." If separate indicator lamps are used for one or more of the various functions described in S5.3.1(a) to S5.3.1(d), the lens shall include the word "Brake" and appropriate additional labeling (use "Brake Pressure," "Brake Fluid" for S5.3.1(a) and S5.3.1(b)) except that if a separate parking indicator lamp is provided, the single word "Park" may be used. An antilock system may have a separate lens labeled "Antilock," in letters not less than one-eighth of an inch high, which shall be legible to the driver in daylight when lighted, if the indicator is used only for the antilock system. The lens and the letters shall have contrasting colors, one of which is yellow. (39 F.R. 6708—February 22, 1974.)]**

#### **S5.4 Reservoirs.**

**S5.4.1 Master cylinder reservoirs.** A master cylinder shall have a reservoir compartment for each service brake subsystem serviced by the master cylinder. Loss of fluid from one compartment shall not result in a complete loss of brake fluid from another compartment.

**S5.4.2 Reservoir capacity.** **[Reservoirs, whether for master cylinders or other type systems, shall have a total minimum capacity equivalent to the fluid displacement resulting when all the wheel cylinders or caliper pistons serviced by the reser-**

voirs move from a new lining, fully retracted position (as adjusted initially to the manufacturer's recommended setting) to a fully worn, fully applied position, as determined in accordance with S7.18(c) of this standard. Reservoirs shall have completely separate compartments for each subsystem except that in reservoir systems utilizing a portion of the reservoir for a common supply to two or more subsystems, individual partial compartments shall each have a minimum volume of fluid equal to at least the volume displaced by the master cylinder piston servicing the subsystem, during a full stroke of the piston. Each brake power unit reservoir servicing only the brake system shall have a minimum capacity equivalent to the fluid displacement required to charge the system piston(s) or accumulator(s) to normal operating pressure plus the displacement resulting when all the wheel cylinders or caliper pistons serviced by the reservoir or accumulator(s) move from a new lining fully retracted position (as adjusted initially to the manufacturer's recommended setting) to a fully worn, fully applied position. (39 F.R. 6708—February 22, 1974.)

**S5.4.3 Reservoir labeling.** Each vehicle shall have a brake fluid warning statement that reads as follows, in letters at least  $\frac{1}{8}$  of an inch high: "WARNING, Clean filler cap before removing,

Use only \_\_\_\_\_ fluid from a sealed container." (Inserting the recommended type of brake fluid as specified in 49 CFR § 571.116, e.g. "DOT 3".) The lettering shall be—

(a) Permanently affixed, engraved, or embossed;

(b) Located so as to be visible by direct view, either on or within 4 inches of the brake fluid reservoir filler plug or cap; and

(c) Of a color that contrasts with its background, if it is not engraved or embossed.

**S5.5 Antilock and variable proportioning brake systems.** In the event of failure (structural or functional) in an antilock or variable proportioning brake system the vehicle shall be capable of meeting the stopping distance requirements specified in S5.1.2 for service brake system partial failure.

**S5.6 Brake system integrity.** Each vehicle shall be capable of completing all performance requirements of S5 without—

(a) Detachment or fracture of any component of the braking system, such as brake springs and brake shoe or disc pad facing, other than minor cracks that do not impair attachment of the friction facing. All mechanical components of the braking system shall be intact and functional. Friction facing tearout (complete detachment of lining) shall not exceed 10 per cent of the lining on any single frictional element.

(b) Any visible brake fluid or lubricant on the friction surface of the brake, or leakage at the master cylinder or brake power unit reservoir cover, seal and filler openings.

**S6. Test conditions.** The performance requirements of S5 shall be met under the following conditions. Where a range of conditions is specified, the vehicle shall be capable of meeting the requirements at all points within the range.

#### **S6.1 Vehicle weight.**

**S6.1.1** [Other than tests specified at lightly loaded vehicle weight in S7.7, S7.8, and S7.9, the vehicle is loaded to its GVWR such that the weight on each axle as measured at the tire-ground interface is in proportion to its GAWR, with the test load material densities specified in S6.2, except that the fuel tank is filled to any level from 100 per cent of capacity (corresponding to full GVWR loading) to 75 per cent of capacity. (39 F.R. 6708—February 22, 1974.)]

[However, if the weight on any axle of a vehicle at lightly loaded vehicle weight exceeds the axle's proportional share of the gross vehicle weight rating, the load required to reach GVWR is placed so that the weight on that axle remains the same as at lightly loaded vehicle weight. (39 F.R. 25945—July 15, 1974)]

**S6.1.2** For the applicable tests specified in S7.7, S7.8, and S7.9, vehicle weight is lightly loaded vehicle weight, with the added weight distributed in the front passenger seat area in passenger cars, multipurpose passenger vehicles and trucks, and in the area adjacent to the driver's seat in buses.

**56.2 Test loads.** The load material is of the density specified below and is distributed in vehicle cargo areas and/or seating areas as follows:

【Seating areas: 50 to 450 lb/ft<sup>3</sup> (all vehicles)

Cargo areas: 50 to 450 lb/ft<sup>3</sup> (all vehicles, including passenger cars, with a GVWR of 10,000 lbs or less),

400 to 725 lb/ft<sup>3</sup> (vehicles with a GVWR that exceeds 10,000 lbs).

(39 F.R. 6708—February 22, 1974.)】

The load material for trucks with a tanker type body is water. If GVWR is not reached, weight is added to obtain GVWR, distributed proportionally to GAWR.

**56.3 Tire inflation pressure.** Tire inflation pressure is the pressure recommended by the vehicle manufacturer for the GVWR of the vehicle.

**56.4 Transmission selector control.** For S7.3, S7.5, S7.8, S7.15, S7.17, S7.11.1.2, S7.11.2.2, S7.11.3.2, and as required for S7.13, the transmission selector control is in neutral for all decelerations. For all other tests during all decelerations, the transmission selector is in the control position, other than overdrive, recommended by the manufacturer for driving on a level surface at the applicable test speed. To avoid engine stall during tests required to be run in gear a manual transmission may be shifted to neutral (or the clutch disengaged) when the vehicle speed decreases to 20 mph.

**56.5 Engine.** Engine idle speed and ignition timing settings are according to the manufacturer's recommendations. If the vehicle is equipped with an adjustable engine speed governor, it is adjusted according to the manufacturer's recommendation.

**56.6 Vehicle openings.** All vehicle openings (doors, windows, hood, trunk, convertible top, cargo doors, etc.) are closed except as required for instrumentation purposes.

**56.7 Ambient temperature.** The ambient temperature is any temperature between 32° F. and 100° F.

**56.8 Wind velocity.** The wind velocity is zero.

**56.9 Road surface.** Road tests are conducted on a 12-foot-wide, level roadway having a skid number of 75. Burnish stops are conducted on

any surface. The parking brake test surface is clean, dry, smooth Portland cement concrete.

**56.10 Vehicle position.** 【The vehicle is aligned in the center of the roadway at the start of each brake application. Stops, other than spike stops, are made without any part of the vehicle leaving the roadway. Except as noted below, stops are made without lockup of any wheel at speeds greater than 10 mph. There may be controlled lockup on an antilock-equipped axle, and lockup of not more than one wheel per vehicle, uncontrolled by an antilock system. Locked wheels at speeds greater than 10 mph are allowed during spike stops (but not spike check stops) partial failure stops and inoperative brake power or power assist unit stops. (39 F.R. 6708—February 22, 1974.)】

**56.11 Thermocouples.** The brake temperature is measured by plug-type thermocouples installed in the approximate center of the facing length and width of the most heavily loaded shoe or disc pad, one per brake, as shown in Figure 1. A second thermocouple may be installed at the beginning of the test sequence if the lining wear is expected to reach a point causing the first thermocouple to contact the metal rubbing surface of a drum or rotor. For center-grooved shoes or pads, thermocouples are installed within

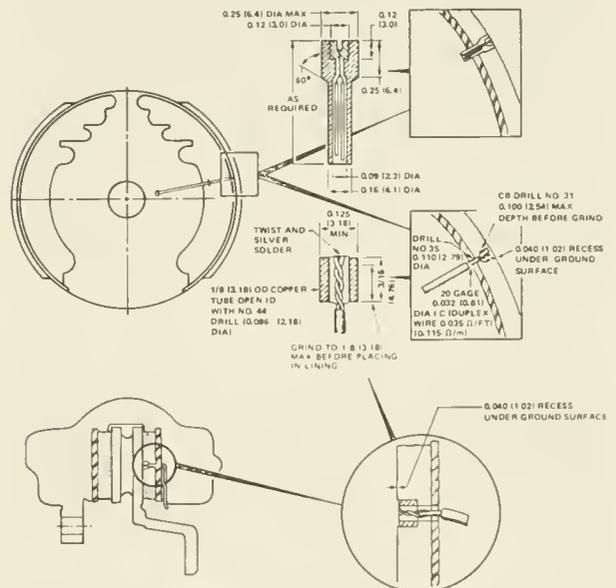


FIGURE 1 - TYPICAL PLUG THERMOCOUPLE INSTALLATIONS

Note: The second thermocouple shall be installed at .080 inch depth within 1 inch circumferentially of the thermocouple installed at .040 inch depth.

one-eighth of an inch to one-quarter inch of the groove and as close to the center as possible.

**S6.12 Initial brake temperature.** Unless otherwise specified the brake temperature is 150° F. to 200° F.

**S6.13 Control forces.** Unless otherwise specified, the force applied to a brake control is not less than 15 pounds and not more than 150 pounds.

**S7. Test procedures and sequence.** [Each vehicle shall be capable of meeting all the requirements of S5 when testing according to the procedures and in the sequence set forth below, without replacing any brake system part or making any adjustments to the brake system other than as permitted in burnish and reburnish procedures and in S7.9 and S7.10. Automatic adjusters may be locked out, according to the manufacturer's recommendation, when the vehicle is prepared for testing. If this option is selected, adjusters must remain locked out for entire sequence of tests. A vehicle shall be deemed to comply with the stopping distance requirements of S5.1 if at least one of the stops at each speed and load specified in each of S7.3, S7.5, S7.8, S7.9, S7.10, S7.15, or S7.17 (check stops) is made within a stopping distance that does not exceed the corresponding distance specified in Table II. (39 F.R. 25945—July 15, 1974)]

[When the transmission selector control is required to be in neutral for a deceleration, a stop or snub shall be obtained by the following procedures: (1) Exceed the test speed by four to eight mph; (2) close the throttle and coast in gear to approximately two mph above the test speed; (3) shift to neutral; and (4) when the test speed is reached, apply the service brakes. (40 F.R. 11584—March 12, 1975. Effective: 9/1/75)]

**S7.1 Brake warming.** If the initial brake temperature for the first stop in a test procedure (other than S7.7 and S7.16) has not been reached, heat the brakes to the initial brake temperature by making not more than 10 snubs from not more than 40 mph to 10 mph, at a deceleration not greater than 10 fpsps.

**S7.2 Pretest instrumentation check.** Conduct a general check of instrumentation by making not more than 10 stops from a speed of not more

than 30 mph, or 10 snubs from a speed of not more than 40 mph to 10 mph, at a deceleration of not more than 10 fpsps. If instrument repair, replacement, or adjustment is necessary, make not more than 10 additional stops or snubs after such repair, replacement or adjustment.

**S7.3 Service brake system—first (preburnish) effectiveness test.** Make six stops from 30 mph. Then make six stops from 60 mph.

**S7.4 Service brake system—burnish procedure.**

**S7.4.1 Vehicles with GVWR of 10,000 pounds or less.**

**S7.4.1.1 Burnish.** Burnish the brakes by making 200 stops from 40 mph at 12 fpsps (the 150 pound control force limit does not apply here). The interval from the start of one service brake application to the start of the next shall be either the time necessary to reduce the initial brake temperature to between 230° F. and 270° F., or the distance of 1 mile, whichever occurs first. Accelerate to 40 mph after each stop and maintain that speed until making the next stop.

**S7.4.1.2 Brake adjustment — post burnish.** [After burnishing, adjust the brakes manually in accordance with the manufacturer's recommendation if the brake systems are manual or if the automatic adjusters are locked out, or by making stops as recommended by the manufacturer if the automatic adjusters are operative. (39 F.R. 25945—July 15, 1974)]

**S7.4.2 Vehicles with GVWR greater than 10,000 pounds.**

**S7.4.2.1 Burnish.** [The brakes of a vehicle manufactured between January 1, 1976 and September 1, 1976 may be burnished according to S7.4.2.1.1 or S7.4.2.1.2. The brakes of a vehicle manufactured on or after September 1, 1976 shall be burnished according to S7.4.2.1.2. (40 F.R. 42872—September 17, 1975. Effective: 9/17/75)]

**S7.4.2.1.1** [Burnish the brakes by making 400 snubs from 40 mph to 20 mph at 10 fpsps (the 150-lb control force limit does not apply here). After each brake application, accelerate to 40 mph and maintain that speed until making the next brake application at a point 1.5 miles from the initial point of the previous brake application. (39 F.R. 6708—February 22, 1974)]

pound control force limit does not apply here). The interval from the start of one service brake application to the start of the next shall be either the time necessary to reduce the initial brake temperature to between 230° F. and 270° F., or the distance of 1 mile, whichever occurs first. Accelerate to 40 mph after each stop and maintain that speed until making the next stop.

**S7.4.1.2 Brake adjustment — post burnish.** [After burnishing, adjust the brakes manually in accordance with the manufacturer's recommendation if the brake systems are manual or if the automatic adjusters are locked out, or by making stops as recommended by the manufacturer if the automatic adjusters are operative. (39 F.R. 25945—July 15, 1974)]

**S7.4.2 Vehicles with GVWR greater than 10,000 pounds.**

**S7.4.2.1 Burnish.** [Burnish the brakes by making 500 snubs at 10 fpsps in the sequence specified in Table IV and within the speed ranges indicated. After each brake application accelerate to the next speed specified and maintain that speed until making the next brake application at a point 1 mile from the initial point of the previous brake application. If a vehicle cannot attain any speed specified in 1 mi, continue to accelerate until the speed specified is reached or until a point 1.5 mi from the initial point of the previous brake application is reached, whichever occurs first. If during any of the brake applications specified in Table IV the hottest brake reaches 500° F. make the remainder of the 500 applications from that snub condition, except that a higher or lower snub condition shall be followed (up to the 60 mph initial speed) as necessary to maintain a temperature of 500° F.±50° F. (41 F.R. 2391—January 16, 1976. Effective: 10/12/76)]

Table IV

Series	Snubs	Snub conditions (highest speed indicated)
1	175	40 to 20 mph
2	25	45 to 20 mph
3	25	50 to 20 mph
4	25	55 to 20 mph
5	250	60 to 20 mph

[(39 F.R. 6708—February 22, 1974.)]

**S7.4.2.2 Brake adjustment — post burnish.** [After burnishing, adjust the brakes manually in accordance with the manufacturer's recommendation if the brake systems are manual or if the automatic adjusters are locked out, or by making stops as recommended by the manufacturer if the automatic adjusters are operative. (39 F.R. 25945—July 15, 1974)]

**S7.5 Service brake system—second effectiveness test.** [Repeat S7.3. Then (for passenger cars) make four stops from 80 mph if the speed attainable in 2 miles is not less than 84 mph. (41 F.R. 2391—January 16, 1976. Effective: 10/12/76)]

**S7.6 First reburnish.** [Repeat S7.4, except make 35 burnish stops or snubs. Reburnish a vehicle whose brakes are burnished according to S7.4.2.1 by making 35 snubs from 60 mph to 20 mph, but if the hottest brake reaches 500° F.±50° F. make the remainder of the 35 applications from such initial speed divisible by five but less than 60 mph as necessary to maintain a temperature of 500° F.±50° F. (39 F.R. 25945—July 15, 1974)]

**S7.7 Parking brake test.** [The parking brake tests for any vehicle on different grades, in different directions, and for different loads may be conducted in any order. The force required for actuation of a hand-operated brake system shall be measured at the center of the hand grip area or at a distance of 1½ inches from the end of the actuation lever, as illustrated in Figure II. (41 F.R. 1066—January 6, 1976. Effective: 1/6/76)]

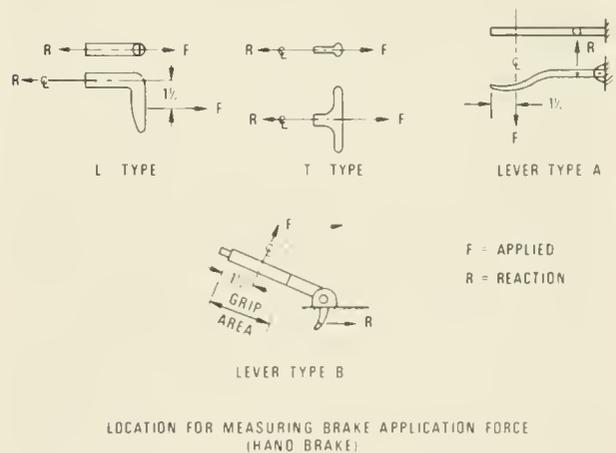


FIGURE II

**S7.7. [Test procedure for requirements of S5.2.1.**

**S7.7.1.1.** Condition the parking brake friction elements so that the temperature at the beginning of the test is at any level not more than 150° F. (when the temperature of components on both ends of an axle are averaged).

**S7.7.1.2** Drive the vehicle, loaded to GVWR, onto the specified grade with the longitudinal axis of the vehicle in the direction of the slope of the grade, stop the vehicle and hold it stationary by application of the service brake control, and place the transmission in neutral. (41 F.R. 1066—January 6, 1976. Effective: 1/6/76)】

【**S7.7.1.3** With the vehicle held stationary by means of the service brake control, apply the parking brake by a single application of the force specified in (a) or (b), except that a series of applications to achieve the specified force may be made in the case of a parking brake system design that does not allow the application of the specified force in a single application:

(a) In the case of a passenger car, not more than 125 pounds for a foot-operated system, and not more than 90 pounds for a hand-operated system; and

(b) In the case of a school bus, not more than 150 pounds for a foot-operated system, and not more than 125 pounds for a hand-operated system.

**S7.7.1.4** Following the application of the parking brake in accordance with S7.7.1.3, release all force on the service brake control and commence the measurement of time if the vehicle remains stationary. If the vehicle does not remain stationary, reapplication of the service brake to hold the vehicle stationary, with reapplication of a force to the parking brake control at the level specified in S7.7.1.3(a) or (b) as appropriate for the vehicle being tested (without release of the ratcheting or other holding mechanism of the parking brake) may be used twice to attain a stationary position. (41 F.R. 2391—January 16, 1976. Effective: 10/12/76)】

【**S7.7.1.5** Following observation of the vehicle in a stationary condition for the specified time in one direction, repeat the same test procedure with the vehicle orientation in the opposite direction on the specified grade.

**S7.7.1.6** Check the operation of the parking brake application indicator required by S5.3.1(d). (41 F.R. 1066—January 6, 1976. Effective: 1/6/76)】

**S7.7.2 [Test procedures for requirements of S5.2.2.**

(a) Check that transmission must be placed in park position to release key;

(b) Test as in S7.7.1, except in addition place the transmission control to engage the parking mechanism; and

(c) Test as in S7.7.1 except on a 20 per cent grade, with the parking mechanism not engaged. (41 F.R. 1066—January 6, 1976. Effective: 1/6/76)】

**S7.7.3 Lightly loaded vehicle.** [Repeat S7.7.1 or S7.7.2 as applicable except with the vehicle at lightly loaded vehicle weight. (39 F.R. 6708—February 22, 1974.)】

**S7.7.4 Non-service brake type parking brake systems.** For vehicles with parking brake systems not utilizing the service brake friction elements, burnish the friction elements of such systems prior to parking brake tests according to the manufacturer's published recommendations as furnished to the purchaser. If no recommendations are furnished, run the vehicle in an unburnished condition.

**S7.8 Service brake system—lightly loaded vehicle (third effectiveness) test.** Make six stops from 60 mph with vehicle at lightly loaded vehicle weight.

**S7.9 Service brake system test—partial failure.**

**S7.9.1** [With the vehicle at lightly loaded vehicle weight, alter the service brake system to produce any one rupture or leakage type of failure, other than a structural failure of a housing that is common to two or more subsystems. Determine the control force or pressure level necessary to cause the brake system indicator to operate. Make four stops if the vehicle is equipped with a split service brake system, or 10 stops if the vehicle is not so equipped, each from 60 mph. by a continuous application of the service brake control. Restore the service brake system to normal at completion of this test. (40 F.R. 47789—October 10, 1975. Effective: 10/10/75)】

**S7.9.2** Repeat S7.9.1 for each of the other subsystems.

**S7.9.3** Repeat S7.9.1 and S7.9.2 with vehicle at GVWR. Determine that the brake system indicator is operating when the reservoir fluid level is at or greater than the level specified in S5.3.1(b). Check for proper operation with each reservoir in turn at a low level. Restore the service brake system to normal at completion of this test.

**S7.9.4** (For vehicles with antilock and/or variable proportioning brake systems). With vehicle at GVWR, disconnect functional power source, or otherwise render antilock system inoperative. Disconnect variable proportioning brake system. Make four stops, each from 60 mph. If more than one antilock or variable proportioning brake subsystem is provided, disconnect or render one subsystem inoperative and run as above. Restore system to normal at completion of this test. Repeat for each subsystem provided. Disconnect electrical power source to unit. Check for operation of warning indicator.

**S7.10 Service brake system—inoperative brake power unit or brake power assist unit test.** (For vehicles equipped with brake power unit or brake power assist unit).

**S7.10.1 Regular procedure.** [(This test need not be run if the option in S7.10.2 is selected.) On vehicles with brake power assist units, render the brake power assist unit inoperative, or one of the brake power assist unit subsystems if two or more subsystems are provided by disconnecting the relevant power supply. Exhaust any residual brake power reserve capability of the disconnected system. On vehicles with brake power units, disconnect the primary source of power. Make four stops, each from 60 mph, by a continuous application of the service brake control. Restore the system to normal at completion of this test. For vehicles equipped with more than one brake power unit or brake power assist unit, conduct tests for each in turn. (39 F.R. 6708—February 22, 1974.)]

**S7.10.2 Optional procedures—passenger cars only.** On vehicles with brake power assist units, the unit is charged to maximum prior to start of

test. (Engine may be run up in speed, then throttle closed quickly to attain maximum charge on vacuum assist units). Brake power units shall also be charged to maximum accumulator pressure prior to start of test. No recharging is allowed after start of test.

(a) (For vehicles with brake power assist units.)

Disconnect the primary source of power. Make six stops each from 60 mph, to achieve the average deceleration for each stop as specified in Table III. Apply the brake control as quickly as possible. Maintain control force until vehicle has stopped.

[At the completion of the stops specified above, deplete the system of any residual brake power reserve capability. Make one stop from 60 mph at an average deceleration of not lower than 7 fpsps for passenger cars (equivalent stopping distance 554 feet), or 6 fpsps for vehicles other than passenger cars (equivalent stopping distance 646 feet) and determine whether the control force exceeds 150 pounds. (39 F.R. 25945—July 15, 1974)]

(b) [(For vehicles with brake power units with accumulator type systems) Test as in S7.10.2(a), except make 10 stops instead of 6 and, at the completion of the 10 stops, deplete the failed element of the brake power unit of any residual brake power reserve capability before making the final stop. (40 F.R. 47789—October 10, 1975. Effective: 10/10/75)]

[(c) (For vehicles with brake power assist or brake power units with backup systems.) If the brake power or brake power assist unit operates in conjunction with a backup system and the backup system is activated automatically in the event of a primary power failure, the backup system is operative during this test. Disconnect the primary source of power of one subsystem. Make 15 stops, each from 60 mph, with the backup system activated for the failed subsystem, to achieve an average deceleration of 12 fpsps for each stop. (39 F.R. 6708—February 22, 1974.)]

(d) Restore systems to normal at completion of these tests. For vehicles equipped with more than one brake power assist or brake power unit, conduct tests of each in turn.

**S7.11 Service brake system—first fade and recovery test.**

**S7.11.1 Baseline check stops or snubs.**

**S7.11.1.1 Vehicles with GVWR of 10,000 pounds or less.** Make three stops from 30 mph at 10 fpsps for each stop. Control force readings may be terminated when vehicle speed falls to 5 mph. Average the maximum brake control force required for the three stops.

**S7.11.1.2 Vehicles with GVWR greater than 10,000 pounds.** With transmission in neutral (or declutched), make three snubs from 40 to 20 mph at 10 fpsps for each snub. Average the maximum brake control force required for the three snubs.

**S7.11.2 Fade stops or snubs.**

**S7.11.2.1 Vehicles with GVWR of 10,000 pounds or less.** [Make 5 stops from 60 mph at 15 fpsps followed by 5 stops at the maximum attainable deceleration between 5 and 15 fpsps for each stop. Establish an initial brake temperature before the first brake application of 130° to 150° F. Initial brake temperatures before brake applications for subsequent stops are those occurring at the distance intervals. Attain the required deceleration within 1 second and, as a minimum, maintain it for the remainder of the stopping time. Control force readings may be terminated when vehicle speed falls to 5 mph. Leave an interval of 0.4 mile between the start of brake applications. Accelerate immediately to the initial test speed after each stop. Drive 1 mile at 30 mph after the last fade stop, and immediately follow the recovery procedure specified in S7.11.3.1. (39 F.R. 6708—February 22, 1974.)]

**S7.11.2.2 Vehicles with GVWR greater than 10,000 pounds.** With transmission in neutral (or declutched) make 10 snubs from 40 to 20 mph at 10 fpsps for each snub. Establish an initial brake temperature before the first brake application of 130° F. to 150° F. Initial brake temperatures before brake application for subsequent snubs are those occurring in the time intervals specified below. Attain the required deceleration within 1 second and maintain it for the remainder of the snubbing time. Leave an

interval of 30 seconds between snubs (start of brake application to start of brake application). Accelerate immediately to the initial test speed after each snub. Drive for 1.5 miles at 40 mph after the last snub and immediately follow the recovery procedure specified in S7.11.3.2.

**S7.11.3 Recovery stops or snubs.**

**S7.11.3.1 Vehicles with GVWR of 10,000 pounds or less.** Make five stops from 30 mph at 10 fpsps for each stop. Control force readings may be terminated when vehicle speed falls to 5 mph. Allow a braking distance interval of 1 mile. Immediately after each stop accelerate at maximum rate to 30 mph and maintain that speed until making the next stop. Record the maximum control force for each stop.

**S7.11.3.2 Vehicles with GVWR greater than 10,000 pounds.** With transmission in neutral (or declutched) make five snubs from 40 to 20 mph at 10 fpsps, for each snub. After each snub, accelerate at maximum rate to 40 mph and maintain that speed until making the next brake application at a point 1.5 miles from the point of the previous brake application. Record the maximum control force for each snub.

**S7.12 Service brake system—second reburnish.** Repeat S7.6.

**S7.13 Service brake system—second fade and recovery test.** Repeat S7.11 except in S7.11.2 run 15 fade stops or 20 snubs instead of 10.

**S7.14 Third reburnish.** Repeat S7.6.

**S7.15 Service brake system—fourth effectiveness test.** [Repeat S7.5. Then (for passenger cars) make four stops from either 95 mph if the speed attainable in 2 mi is 99 to (but not including) 104 mph, or 100 mph if the speed attainable in 2 mi is 104 mph or greater. (41 F.R. 2391—January 16, 1976. Effective: 10/12/76)]

**S7.16 Service brake system—water recovery test.**

**S7.16.1 Baseline check stop.** Make three stops from 30 mph at 10 fpsps for each stop. Control force readings may be terminated when vehicle speed falls to 5 mph. Average the maximum brake control force required for the three stops.

**S7.16.2 Wet brake recovery stops.** With the brakes fully released at all times, drive the vehicle for 2 minutes at a speed of 5 mph, in any combination of forward and reverse directions, through a trough having a water depth of 6 inches. After leaving the trough, immediately accelerate at maximum rate to 30 mph without a brake application. Immediately upon reaching that speed make five stops, each from 30 mph at 10 fpsps for each stop. After each stop (except the last), accelerate the vehicle immediately at a maximum rate to a speed of 30 mph and begin the next stop.

**S7.17 Spike stops.** Make 10 successive spike stops from 30 mph with the transmission in neutral, with no reverse stops. Make spike stops by applying a control force of 200 pounds while recording control force versus time. Maintain control force until vehicle has stopped. At completion of 10 spike stops, make six effectiveness stops from 60 mph.

**S7.18 Final inspection.** Inspect—

(a) The service brake system for detachment or fracture of any components, such as brake springs and brake shoes or disc pad facing.

(b) The friction surface of the brake, the master cylinder or brake power unit reservoir cover and seal and filler openings, for leakage of brake fluid or lubricant.

(c) The master cylinder or brake power unit reservoir for compliance with the volume and labeling requirements of S5.4.2 and S5.4.3. In determining the fully applied worn condition assume that the lining is worn to (1) rivet or bolt heads on riveted or bolted linings or (2) within  $\frac{1}{32}$  inch of shoe or pad mounting surface or bonded linings, or (3) the limit recommended by the manufacturer, whichever is larger relative to the total possible shoe or pad movement. Drums or rotors are assumed to be at nominal design drum diameter or rotor thickness. Linings are assumed adjusted for normal operating clearance in the released position.

(d) The brake system indicator light(s), for compliance with operation in various key positions, lens color, labeling and location, in accordance with S5.3.

**S7.19 Moving barrier test.** (Only for vehicles that have been tested according to S7.7.2). Load the vehicle to GVWR, release parking brake and place the transmission selector control to engage the parking mechanism. With a moving barrier as described in paragraph 3.3 of SAE Recommended Practice J972 "Moving Barrier Collision Tests," November 1966, impact the vehicle from the front at  $2\frac{1}{2}$  mph. Keep the longitudinal axis of the barrier parallel with the longitudinal axis of the vehicle. Repeat the test, impacting the vehicle from the rear. Note: The vehicle used for this test need not be the same vehicle that has been used for the braking tests.



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 106****Brake Hoses****(Docket No. 1-5; Notice 8)**

This notice amends 49 CFR 571.106, Motor Vehicle Safety Standard 106, *Hydraulic Brake Hoses*, by (1) extending its requirements to all motor vehicles and hydraulic, air, and vacuum brake hose, brake hose assemblies, and brake hose end fittings for use in those vehicles, (2) replacing some design-oriented requirements with performance requirements for brake hose, brake hose assemblies, and brake hose end fittings, and (3) establishing comprehensive labeling requirements for brake hose, brake hose assemblies, and brake hose end fittings.

A notice of proposed rulemaking on this subject was published on March 30, 1971 (36 F.R. 5855). It revised and corrected earlier proposed amendments and proposed the elimination of many design specifications in favor of broad performance requirements. This reorientation generated little comment, but extensive comments were received on the details of the proposed requirements.

Tests conducted by the NHTSA Safety Systems Laboratory and comments to the docket both indicated that the extensive sequential testing proposed in the NPRM could be an unpredictable measure of brake hose performance and much sequential testing was eliminated. One of the remaining sequential tests requires that all hose assemblies meet the constriction test as well as any other single test.

Several comments indicated confusion concerning the rule's applicability to components of the brake system. The definition of brake hose now limits the standard to flexible conduits that transmit or contain the fluid pressure or vacuum used to apply force to a vehicle's brakes. This excludes such hose as that from the brake fluid reservoir to the master cylinder, and that from

the air compressor discharge to its reservoir. Chassis plumbing which is flexible falls within the definition of brake hose, as does hose from the engine to the vacuum booster.

In response to continued requests for physical tolerances and related accommodations for testing, it is reiterated that the safety standards should in all cases be considered as performance levels that each vehicle or item of equipment must meet, and not as instructions for manufacturer testing. Thus, a 35-hour continuous flex test procedure sets the minimum performance level that the hose must meet when the NHTSA tests for compliance. The manufacturer may certify this performance level on the basis of interrupted tests as long as, in the exercise of due care, these tests provide assurance that his hose complies and will withstand 35 hours of continuous flexing. In response to another question, the manufacturer must determine for himself how frequently he should test his products to ensure that they comply.

The standard does not establish varying burst strength requirements for different size hose, because all sizes may be subject to extreme pressure conditions. Neither does the standard remove wire-braided air brake hose from the adhesion requirements as requested, because the NHTSA has concluded that properly embedded wire-braided hose will sustain an 8-pound pull, and that no sufficient data exists to exempt wire-braided hose at this time.

Labeling requirements have been modified in response to comments to permit (1) lettering to fit smaller size hoses, (2) antitorque stripes that are "clearly identifiable" in order to accommodate a molding process as well as color-striping, (3) use of fractions to express the hose inside

diameter, and (4) interruption of the second stripe with optional additional information not permitted in the legend that interrupts the first stripe. In this way, the labeling provision requires certain safety-related information expressed in a specified format, and it also permits labeling with additional information by the manufacturer at his option. For example, several comments suggested the use of "air-brake" in lieu of "A" and inclusion of SAE air brake-hose type designations as a part of labeling air brake components. Another comment requested metric labeling. As modified, the standard now permits all this information to be placed on the hose as additional information.

Labeling requirements for brake hose end fittings manufacturers no longer include the assembly completion date. Instead, the assembler is required to place a band on each hose assembly which indicates the assembly completion date. "Brake hose assembly" has been redefined to exclude assemblies containing used components, and this effectively excludes repair operations from the requirements of the standard.

The amendment has been reorganized to clearly indicate that it applies to three types of hose, hose assemblies, and end fittings. The requirements and test procedures for each type of hose have been grouped together for clarity, in response to docket comments.

Changes to the hydraulic brake hose requirements include revision of many sequential tests. The 1,500 psi air pressure resistance test was eliminated as an inappropriate measure of hydraulic brake hose performance. The water absorption test proposed in the NPRM was divided into three distinct tests. The test temperature in the brake fluid compatibility test has been lowered to more accurately reflect vehicle operating conditions and to approach a more suitable test temperature for the specified procedure.

Few changes were made to the vacuum brake hose section. In response to the request of its manufacturers,  $\frac{3}{32}$ -inch hose has been added to the performance requirements data. Distinctions between light and heavy duty hose were largely eliminated.

All sequential testing except for the constriction test and one water absorption-tensile strength test has been eliminated from the air brake hose requirements. Comments indicated that the extensive combination of tests was inappropriate to measure the adequacy of traditionally constructed air brake hose. The ultraviolet test has been eliminated until sufficient data is generated to support a minimum performance requirement. The standard has also been modified to allow use of permanent as well as reusable end fittings. As anticipated in the NPRM, outside and inside diameter specifications have been added to the requirements for two types of air brake hose, although these specifications do not require the use of Standard SAE 100R5 fittings as proposed in the NPRM.

The suggested standardization on 100R5 fittings generated the greatest number of comments on the rulemaking. Comments generally agreed that thread engagement and component attachment should be standardized. However, disagreement exists on which fitting is most suitable for standardization. Many comments indicated that type E fittings are predominant in the industry and will be more so in the future and that their non-proprietary design permits manufacture by anyone. The NHTSA has decided, on the basis of the comments received, not to standardize on any type of fitting at this time. This amendment only establishes hose diameters and tolerances intended for use in reusable air brake hose assemblies as a first step toward standardization of the air brake hose assembly. Notice and further opportunity to comment will precede any rulemaking on the standardization of air brake hose assemblies.

In consideration of the foregoing, Standard No. 106, *Brake Hoses*, 49 CFR Part 571.106, is amended to read as set forth below.

Effective date: September 1, 1974.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on November 5, 1973.

James B. Gregory  
Administrator

**38 F.R. 31302**  
**November 13, 1973**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 106

### Brake Hoses

(Docket No. 1-5; Notice 9)

This notice amends Standard No. 106, *Brake hoses*, 49 CFR 571.106, to require a manufacturer designation in place of the manufacturer identification code assigned by the National Highway Traffic Safety Administration (NHTSA) which is presently required by the labeling provision.

The NHTSA has not completed consideration of comments to its manufacturer's identification code proposal published June 7, 1973 (38 F.R. 14968). General Motors has stated that production of 1975 model vehicles that conform to Standard 106 will require the immediate manufacture of brake hose that conforms to Standard 106. This amendment modifies the identification requirements to permit the use of manufacturer designations, such as those presently in use, until the NHTSA issues a final rule on the manufacturer's identification code proposal. At that time the standard would be amended again to require whatever code might be assigned by the NHTSA.

Other matters raised by petitions for reconsideration are presently under consideration and

will be answered in accordance with the procedures of 49 CFR 553.35, *Petitions for reconsideration*.

In consideration of the foregoing, Standard 106 (49 CFR 571.106) is amended . . . .

*Effective date:* January 29, 1974. Because this amendment creates no additional burden, and because of the immediate need for an effective requirement applicable to equipment to be produced for the 1975 model year, it is found for good cause shown that notice and public procedure thereon are impracticable, and that an immediate effective date is in the public interest.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on January 23, 1974.

James B. Gregory  
Administrator

**39 F.R. 3680**  
**January 29, 1974**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 106-74****Brake Hoses****(Docket No. 1-5; Notice 10)**

This notice responds to petitions for reconsideration of amended Standard 106, *Brake hoses*, 49 CFR 571.106, published November 13, 1973 (38 F.R. 31302). In response to comments by 36 manufacturers and users of brake hoses, the National Highway Traffic Safety Administration (NHTSA) amends the definitions, labeling, and performance provisions of the standard in several respects.

The Motor Vehicle Manufacturers Association, the American Trucking Association, and three manufacturers questioned the applicability of the standard to nylon and thermoplastic tubing used in the chassis plumbing of air brake systems. They asserted that Notice 7 offered no opportunity for comment on the properties and use of this material and that no safety need could justify its inclusion in the standard. The comments point to a distinction in industry terminology between "tubing" and "hose" to argue that NHTSA use of the term "hose" limited the proposal to traditional applications of six SAE hose types at articulating points in the air brake system.

The NHTSA considers that the broad definition of "Airbrake hose" provided an opportunity to comment on the issue of tubing. Notice 7 defined "Airbrake hose" as "a flexible hose for use in an airbrake system . . ." and it clarified this definition in the preamble to the notice.

Major revisions have been made in the airbrake hose portion of the proposal by eliminating the six types previously specified. Thus an airbrake hose under the proposal may be manufactured from any material as long as the hose can meet the performance requirements of the standard.

The NHTSA included "flexible" in its definition of hose, despite the common meaning of hose as

flexible pipe or tubing, to emphasize the exclusion of relatively inflexible elements of an airbrake system such as copper tubing commonly found in chassis tubing. Finally, the broad term "air brake system" adequately gives notice of the standard's applicability to the chassis plumbing portion of that system. The NHTSA determined that a safety need exists to include flexible chassis plumbing in this standard because it is used in the same environment as hose located at articulating points and is subject to many of the same types of stress, including heat, cold, and pressure. A failure of either flexible conduit creates as great a safety hazard. For these reasons, the petitions that tubing be excluded from the standard are denied.

Manufacturers who commented on the use of nylon and thermoplastic in air brake systems expressed confidence that their products, which are in widespread use as chassis plumbing, will meet the requirements of the standard. They requested testing to exclude inadequate materials which might also meet the present requirements. The NHTSA expects to propose additional requirements after review and testing demonstrate that traditional hose materials presently in use will not be excluded arbitrarily. In the interim, the NHTSA's safety defect authority can prevent the use of inadequate materials.

To accommodate the inclusion of nylon and thermoplastic, the comments also requested a revision of the tensile strength value for the smaller nylon and thermoplastic hose. This change has been made. It should be stressed that the applicability of this standard to nylon and thermoplastic tubing does not affect tubing construction or characteristics.

"Brake hose" is defined in the final rule as "a flexible conduit that transmits or contains the fluid pressure or vacuum used to apply force to a vehicle's brakes." Wagner Electric and several other manufacturers argued that a definition like this which differs from accepted industry terminology should include a list of the parts of the brake system it covers. Actually, the use of general language different from industry terminology is specifically intended to avoid identification with specific designs and thereby permit the definition to accommodate future designs as they develop. The preamble refers to specific lines only in response to manufacturer requests for interpretations, and the NHTSA will continue to provide interpretations to interested persons upon request. The NHTSA interprets the term "flexible" to exclude copper or steel tubing. In response to Chrysler, General Motors, Ford, and Mercedes-Benz, the NHTSA reiterates that the vacuum and hydraulic booster lines that service power brake systems transmit or contain pressure used to apply force to a vehicle's brakes within the meaning of the definition. Accessory air lines such as those to the power air horn and windshield wipers are, of course, excluded.

The definition of "brake hose assembly" in the rule covered both combinations of clamps and hose and combinations of end fittings and hose. The NHTSA has deleted reference to clamps, in agreement with manufacturers who pointed out that the mounting of a slip-on clamp and hose is an essentially different manufacturing operation that, if regulated, should be subject to different performance requirements from brake hose assemblies. The clamp assemblies are subject to NHTSA safety defect authority. Comments disagreed for various reasons on the exclusion of hose assemblies containing used components from the standard. The NHTSA concludes that the exclusion is realistic and justified.

The standard now defines "permanently attached end fittings" to make clear that 3-piece hose fittings which utilize sacrificial sleeves or ferrules are permanently attached end fittings and that the hose used with them is not prohibited by S7.1. In addition to the action taken with respect to the definition,  $\frac{3}{8}$ -in and  $\frac{1}{2}$ -in hose sizes have been added to Table III under

both Type I and Type II hose in order that their use may be continued.

The definition of "rupture" has been modified slightly to make clear that the two types of failure included in the definition are "separation of the hose from its end fitting" and "leakage". Both a small leak and a hose burst constitute "leakage" under this definition.

Manufacturers of brake hose assemblies and vehicles petitioned for numerous variations in the labeling provisions. The many proposed changes in brake hose assembly labeling illustrate the importance of uniform labeling in a field where differing combinations of responsibility exist between manufacturers and installers of hose assembly components.

The NHTSA has determined that the basic assembly banding technique set forth in Notice 8 remains the clearest uniform identification method for assembly manufacturers. The band may be freely attached at any point on the assembly to minimize binding and wear as long as it is retained by the end fittings. An exception to the banding requirement has been made for the vehicle manufacturer who assembles and installs his own brake hose assemblies, because his assemblies are integrally related to the vehicle, and the vehicle certification and identification information serves to identify and certify the hose assembly. The manufacturer may choose to band those hose assemblies subject to being rebuilt, to delimit his responsibility in the event a rebuilt assembly fails.

Manufacturers will be permitted to mark the date of manufacture by day or month on the assembly and hose. The identification code required on each component is not yet available for issuance and therefore an amendment of the standard has already been issued to permit use of a manufacturer designation in place of the code (39 F.R. 3680, January 29, 1974). That language has been revised to allow the use of a manufacturer designation that does not consist of the block capital letters otherwise required by S5.2.2, S5.2.3, and S5.2.4.

The labeling requirements now reflect the use of nominal inside and outside diameter designations. The hose labeling has been modified from "not less than 6 inches" to "not more than

6 inches" in response to many requests. Toyota's request for one-stripe labeling of required and optional information has been denied, to ensure that the required information appears at least once on hose as short as 4 inches. The NIITSA has denied requests for rearrangements of the required information, concluding that they would not make it clearer to the user. In response to Midland-Ross' request for clarification, it is reiterated that, while the NIITSA requires certain safety-related information expressed in a certain format, it does not prohibit the addition of other information elsewhere on hydraulic, air, or vacuum hose.

Several manufacturers of hydraulic brake hose assemblies argued that end-fitting labeling information becomes meaningless once a fitting is permanently attached to a hose. They reasoned that the crimping process deforms the fitting, its coating, and possibly the lettering, so that no fitting manufacturer would certify his product to the assembler, and that the responsibility for the fitting's conformity would in any case fall on the assembler.

While the NHTSA expects the labeling information to serve a useful purpose on reusable and 3-piece permanently attached end fittings, the limited benefit of markings on a crimped fitting justifies their elimination. In fact the one performance requirement that applies to fittings has been modified to reflect the crimping process and it effectively becomes the assembler's responsibility to meet this corrosion resistance provision.

There were several general comments on the performance requirements and the test procedures. There were requests for physical tolerances, especially for the expansion test apparatus, and related accommodations for test purposes. These arise from misunderstanding of the legal nature of the safety standards, which are performance levels that each vehicle or item of motor vehicle equipment must meet, and not instructions for manufacturer testing. In the case of a calibration factor, for example, the NIITSA set an exact performance level by stating its requirement without a tolerance. Then, in compliance testing, it determines the calibration factor of its equipment and gives the benefit of that factor to the manufacturer in assessing the test results.

Correspondingly, the manufacturer should deal with an exact performance level by determining the calibration factor of his equipment and penalizing his test results by that amount. Manufacturer testing should be directed at proving the equipment's capability in the exercise of due care, by testing under conditions at least as adverse as any that could be established in accordance with the procedures. For example, to accept Goodyear's suggested room temperature range of 65° to 90°F. would permit the NIITSA to test at any temperature within the range, and a manufacturer would correspondingly have to test to assure himself that his product would conform at every point within the range.

Toyota expressed some confusion about sequential testing. As stated in S5.3, S7.3, and S9.2, a particular hose, end fitting, or hose assembly need not meet further requirements after having met the constriction requirements and any one other requirement listed. A particular hose assembly, therefore, would have to meet the constriction requirement in each case and then one other selected requirement, of which S5.3.6, *Water absorption and tensile strength*, is one example.

The constriction requirement requires that any cross section which the NIITSA chooses to examine will be a certain percentage of the nominal diameter. Again the manufacturer may utilize whatever test method convinces him in the exercise of due care that his product conforms to the constriction requirement. Chrysler objected to the application of the constriction test to hose assemblies, citing situations where restrictions are designed into brake systems for pressure control. The NIITSA has determined that the established percentages limit constrictions to a safe level.

With regard to the requirements as a group, it is noted that, while a hose must conform to any of the requirements, it need not be tested to requirements that are obviously inapplicable. For instance, thermoplastic tubing need not be subjected to the adhesion test because it is obvious that there are no layers in this constriction which could fail to adhere.

Numerous comments were addressed to specific hydraulic performance requirements. The expansion and burst-strength requirements included a

30-minute waiting period, which has been eliminated as unnecessary. The procedure is modified to better describe the test sequence, and two values in Table I are corrected.

With regard to mounting hose assemblies having L-shaped end fittings in a flexing machine, the test procedures have been modified to permit the use of adapters to secure the assembly to the machine with the same orientation as a straight assembly.

The low-temperature resistance test for hydraulic hose has been modified from  $-65^{\circ}\text{F}$ . to  $-40^{\circ}\text{F}$ . in line with air and vacuum hose test values.

A hydraulic hose assembler objected that use of SAE RM-1 compatibility fluid had not been proposed in Notice 7 and therefore could not be specified in the final rule. Notice 7 proposed use of "brake fluid conforming to Standard No. 116." This means that the NHTSA could have chosen any such fluid for use in its tests, and that the manufacturer would have to test with each fluid or otherwise assure himself in the exercise of due care that his hose assembly could meet the requirements using each fluid conforming to Standard No. 116. Specification of a single fluid is therefore a relaxation of the proposed requirement. The Society of Automotive Engineers Referee Materials Subcommittee, which contracts for production of RM-1 fluid, has assured the NHTSA of its continued availability for at least the next 3 years. A modification of the requirements has been made for mineral-type systems.

The NHTSA agrees with Wagner Electric that the end fitting corrosion requirement must accommodate the crimping and labeling process, and the requirement is amended to permit displacement of the protective coating necessary to mark the fittings and attach it to a hose.

Several comments were addressed to the air brake hose requirements. Clarifying language has been added to make clear that air brake hose assemblies may be constructed with permanent or reusable end fittings. Table III now includes A- and B-type hose in  $\frac{3}{8}$ - and  $\frac{1}{2}$ -in special diameters to assure its continued availability, particularly for replacement purposes. The constriction test value of 66 percent remains unchanged because the calculation method is

already consistent with hydraulic value of 64 percent.

Table IV is revised to include outside dimensions. New, smaller radii for tubing tests cannot be adopted, however, until there has been notice and opportunity to comment. In answer to Toyota's request for interpretation, it is correct that the test cylinder radii are directly proportional to the diameter of the hose being tested. Suggestions to examine the inner as well as outer layers of hose subjected to the low-temperature resistance test will be considered in future rulemaking, since interested persons should be given notice and opportunity to comment. The same considerations apply to Samuel Moore Company's suggested higher test temperature in the oil-resistance requirement, more demanding percentages in the length change requirement and the high-temperature burst strength test. The oil resistance test specimen has been modified to one-third of an inch in width because  $\frac{1}{2}$ -in specimens can not be cut from the smaller hose sizes. The burst strength value is reduced to 800 psi to accommodate nylon and thermoplastic tubing while retaining a safety performance level five times that of normal operating conditions.

The application of air pressure has been retained in the length change test and the air pressure test, despite requests for "optional" pressure sources. Hidden options of this type are generally undesirable in the safety standards, since they make uncertain the level of required performance, and complicate the comparison of manufacturer and NHTSA test results. The manufacturer is free to use pressure sources other than air as long as his results assure him that the hose would meet the requirement if air were used.

Manufacturers proposed alternative means of testing the adhesion of hose layers because of the difficulty associated with testing wire-braided and small diameter hose. As pointed out in the petitions, sufficient care in conducting the present test will prevent these difficulties. Any manufacturer who believes that the alternative procedure has significant advantages should submit a petition for rulemaking with supporting data.

Some comments on the adhesion test argued for the averaging of test results without specifying any objection to the present procedure. At this time, it does not appear that averaging would be desirable for purposes of this standard. In another area, some tensile strength test values have been reduced in recognition of the use of tubing in nonarticulating applications. The distinction between permanent and reusable fittings is eliminated, consistent with the rationale that the components may operate under the same conditions.

The NHTSA denies Wagner Electric's requested re-establishment of the air pressure test procedures which appeared in Notice 7. These procedures were modified because comments objected to the measuring technique. As noted previously, the manufacturer may use any test method which assures him the equipment meets the requirement as stated.

One significant question was raised with regard to the vacuum hose requirements. Table V inadvertently listed the same hose lengths and cylinder radii for the low and high temperature resistance tests. A new column of values is added to that table.

Because of the additional leadtime required to purchase conforming brake hose and assemblies for use in vehicles which must conform to the standard, the effective date of the standard as it applies to vehicles is delayed 4 months to Jan-

uary 1, 1975. An amendment to the presently effective Standard 106 permits compliance either with that standard or with this standard, as it is effective September 1, 1974.

Interested persons are reminded that, in addition to the amendments set forth below, an amendment of Standard 106 has already been issued which permits the use of a manufacturer designation in place of the identification code called for in the rule as first issued. (39 F.R. 3680, January 29, 1974.)

In consideration of the foregoing, both Standard No. 106, 49 CFR 571.106, in its presently effective form and Standard No. 106 as it is effective September 1, 1974, and January 1, 1975, are amended.

The present Standard No. 106 is amended by the addition of a new paragraph . . . .

*Effective dates:* September 1, 1974, for equipment covered by the standard; January 1, 1975, for vehicles to which the standard applies.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on February 20, 1974.

James B. Gregory  
Administrator

**39 F.R. 7425**

**February 26, 1974**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 106-74

### Brake Hoses

(Docket No. 1-5; Notice 11)

This notice amends Standard No. 106, *Brake hoses*, 49 CFR 571.106, by modifying the definition of "permanently attached end fitting", the effective date for brake hose assemblies and vehicles, several labeling requirements, and certain tensile strength, constriction, and corrosion resistance requirements, in response to petitions for reconsideration of amendments published January 29, 1974 (39 FR 3680) (Notice 9) and February 26, 1974 (39 FR 7425) (Notice 10). In addition, Toyo Kogyo Company, in a letter request for interpretation, pointed out an inadvertent change of language in Notice 8 (38 FR 31302, November 13, 1973) which is corrected in this notice.

#### Notice 9

Notice 9 amended the standard to permit the use of "a designation that identifies the manufacturer" of an end fitting, hose or hose assembly in place of a manufacturer identification code which the NHTSA is not yet prepared to issue. Any designation which is filed with the NHTSA may be used until the permanent code is implemented. The only comment on Notice 9 was made by Weatherhead Company, which objected to any interim marking on grounds of expense and advocated elimination of all label identification from the hose. The NHTSA considers identification other than a colored thread to be reasonable and necessary for rapid recognition, and Weatherhead's first petition is denied.

Although not raised by Weatherhead in its petition, several assemblers have objected that the manufacturer designation requirement conflicts with the general industry practice of marking hose with the distributor's designation. The NHTSA requirement that the manufacturer designation appear on one side of the hose in the

required format does not in any way prevent labeling of hose with the distributor's designation on the opposite side of the hose along with other optional information.

Weatherhead petitioned for revision of the identification requirements to permit designations other than block capital letters and numerals. The necessary language has already been added to the standard in Notice 10.

Weatherhead also requested a modification of the definition of "end fitting" that would exclude end fitting components from the labeling requirements in order to accommodate the practice of assembler intermixing of components made by different manufacturers. Such an exclusion of components, combined with the present exclusion of labeling crimped-on fittings, would eliminate all identification requirements for all fittings. While unlabeled crimped fittings may be traced through the hose assembler's band, "renewable" or reuseable fittings must be labeled at least once to permit location of any defective fitting which was attached to new hose and then reused after it passed out of the control of the assembler and the NHTSA. Although the NHTSA does not find labeling of each part of a fitting to be feasible, it does not consider it unduly burdensome for an assembler to ensure that the newly assembled fitting is composed entirely of parts made by the manufacturer whose designation appears on one part. This also responds to International Harvester's request for interpretation on labeling multi-piece fittings.

#### Notice 10

Notice 10 amended the standard in response to petitions for reconsideration of the regulation as it had been issued in final form November 13,

Effective: September 1, 1974  
March 1, 1975  
September 1, 1975

1973 (38 FR 31302). The twelve petitions for reconsideration of this notice emphasized confusion over the status of hose, fittings, and assemblies manufactured before the effective date, and disagreement with certain labeling requirements and the applicability of the standard to particular hose types and applications.

The use of hose and fittings manufactured before the September 1, 1974, effective date raises two problems. The most difficult of these problems is that the components may not conform to any or all of the performance requirements of Standard 106, and therefore could not be made into assemblies or vehicles after the appropriate effective date. To alleviate this "existing stock" problem, Notice 10 delayed the effective date of the standard for vehicles 4 months to permit the utilization of non-106 components. This did not solve the problem, however, as pointed out by Ford and by White Motor Corporation, because the hose and fittings made immediately before the effective date must be made into assemblies after the effective date before they can be used in vehicles. This notice therefore delays the effective date of the standard for six months as it applies to assemblies. The March 1, 1975, date is set with reference to materials submitted by vehicle and hose and fitting manufacturers that support a delay somewhat longer than 4 months to absorb existing stocks. Because it will take some months to stock inventories with conforming assemblies after March 1, 1975, the effective date of the standard for vehicles is delayed until September 1, 1975.

The delay in effective date for assemblies and vehicles will minimize difficulties in the transition to hose marked with the DOT symbol. This transition problem arises because of the requirement that the DOT appear on conforming hose, fittings, and assemblies, but that it not appear on hose to which no safety standard applies, that is, hose manufactured before the standard's effective date. This principle has been consistently followed in the labeling of tires and other items of motor vehicle equipment to avoid confusion in the meaning of the symbol and the concept of compliance. The problem does not arise in the labeling of hydraulic hose for use in passenger cars because a standard already applies and the

DOT symbol can be used to indicate compliance with it.

The difficulty in labeling brake hose with the DOT symbol is not that of a September 1, 1974, "midnight changeover". The problem is that any hose assemblies used in new vehicles must conform to the standard as of the effective date for vehicles. With the present change, the hose and fittings used as original equipment must bear the DOT symbol as of September 1, 1975. The new effective dates provide six months to absorb pre-standard stock in assemblies and then six more months to prepare conforming assemblies for use in 1976 model vehicles. What stock remains can, of course, be sold in the replacement market.

The greatest number of petitions concerned the applicability of the standard to specific hose types and applications in the vehicle. Three petitions again sought the exclusion of plastic tubing from the standard, stating reasons which have already been responded to in detail in the preamble to Notice 10. The major concern in this area appears to be whether specific tubing assemblies are subject to the high tensile strength tests for "relative motion". This term has raised numerous requests for interpretation, and to make clearer the tensile strength distinction, "relative motion" has been replaced with more specific wording. The new language specifies that hose assemblies (other than coiled nylon tube assemblies which meet the requirements of BMCS Regulations (49 CFR § 393.45)) used between chassis and axles or between towing and towed vehicles must meet the higher tensile strength requirements.

The American Trucking Association (ATA) mistakenly concluded that the signal line between tractor and trailer was totally excluded from the standard, and also the line to any reservoir and to the spring brakes. All these lines fall within the definition of brake hose because the signal pressure, the pressure to the reservoir, and the pressure to the spring brake chamber in each case is "used to apply force to the brakes". This wording should not be misread as restricted to pressure directly used to *apply* the brakes.

The definition of brake hose has been reworded to avoid a problem in another area. As presently worded only hose actually used in the brake sys-

tem would qualify as brake hose and be entitled to be labeled with the DOT symbol. The rewording permits hose "manufactured for use in a brake system" to be labeled with the DOT symbol even if it is used, for example, as a supply line to the windshield wiper system.

Weatherhead requested further definition of the term "flexible" as it is used in the definition of brake hose. The NHTSA continues to believe that this concept can best be treated on a case-by-case request for interpretation and, as noted in Notice 10, will continue to make interpretations upon request.

Chrysler petitioned for a change in the wording of the definition of "brake hose", apparently directed toward the exclusion of the hydraulic brake booster assembly from the standard. Ford, General Motors, and the Motor Vehicle Manufacturers Association (MVMA) also petitioned to exclude the hydraulic booster lines on the grounds that they are subject to a different working environment than brake hose. The most important difference is the constant flow of fluid through them, requiring a long, complicated, tuned, and expandable hose. The NHTSA has concluded that the difference in requirements for the hydraulic booster system justifies special performance requirements for this application. Until these requirements are developed, hydraulic brake booster hose running from pump to accumulator will be considered to be exempt from the requirements of this standard. Hose running from accumulator to booster will also be exempted if redundant booster is provided. This exemption applies to hoses for which Rolls Royce petitioned for exemptions from certain test requirements.

White Motor Corporation petitioned to include "the chassis portion" in the definition of brake hose assembly, incorrectly assuming that the discussion of chassis plumbing in the preamble to Notice 10 limited the definition to brake line mounted to the frame at one point. Chassis plumbing was emphasized in Notice 10 only because inclusion of that part of the brake system in the standard had been questioned by several petitioners. In answer to White, Standard No. 106 is not limited to hose "installed on the chassis to the point of the last mechanical connection",

but includes any hose equipped with end fittings for use in a brake system.

The ATA expressed dissatisfaction at the applicability of hose assembly requirements to assemblies made in the field from all-new components. The NHTSA has accommodated emergency repairs by excluding hose assemblies which contain used components, whether renewable or reusable. There is no reason, however, to routinely exempt the smaller assemblers from the requirements of the standard simply because past practices have permitted fabrication of assemblies in the field by anyone who has the necessary equipment. In this regard, the NHTSA believes the practice of refabrication of hose assemblies in the correct length in the field for emergency repairs promotes safety, by not forcing substitution of a permanent assembly which is only a "close fit". For this reason Weatherhead's petition to require permanent fittings on all brake hose is denied.

Several questions were raised with regard to end fittings. Most important to manufacturers is elimination of the reference to two- and three-piece end fittings in the definition of permanently attached end fittings. This definition, as well as the reference in S5.2.3, has been changed to eliminate this design restriction.

The status of intake manifold connectors and booster check valves typically clamped to the ends of vacuum booster hose were also questioned. "Brake hose end fitting" is defined as "a coupler, other than a clamp, designed for attachment to the end of a brake hose." As typically configured, the couplers are the clamps, and the intake manifold connection and brake booster check valve are engine components to which the brake hose has been attached by the clamp couplers. Therefore neither component is subject to Standard 106.

Several petitions addressed the labeling of fittings, as well as hose and assemblies. Two of the major concerns, use of the DOT symbol and the marking of multi-piece end fittings, have been discussed earlier.

Labeling of brake hose "at intervals of no more than six inches, measured from the end of one legend to the beginning of the next" can create several problems; for example, spray painting of a vehicle frame in which hose has been

mounted. Mack argued that the legend need appear only once on hose which has been made into an assembly and mounted in a vehicle. The NHTSA has concluded that the value of the continuous line and legend, as a ready source of the hose characteristics on bulk hose and as aid to untwisted installation, is exhausted when an assembly has been mounted. Therefore S5.2.2 has been modified to require only that the legend appear at least once on assemblies mounted in vehicles. It is emphasized that masking material used in painting must be removed so that the labeling does appear on the completed vehicle. Only the required information may appear along one side of the hose.

The labeling distance of a maximum 6 inches between legends is intended to ensure adequate repetition on bulk hose without restricting the size of the legend. A manufacturer is free to make the legend as short or long as he feels is necessary to make the information clear, and on this basis, Midland-Ross' petition to require labeling at 6-inch intervals measured from the beginning of one legend to the beginning of the next is denied. Weatherhead expresses confusion over a Notice 10 preamble reference to the complete legend appearing in 4 inches. This statement was only intended to illustrate a situation where a mixture of optional and required labeling would interfere with the appearance of complete labeling on some hose assemblies, and it did not imply a requirement that the legend must be 4 inches long.

Although no manufacturer specifically requested a change, the NHTSA has concluded that clarity would not be substantially degraded by permitting required label information to appear in any order. The requirement for a specific order of label information has accordingly been deleted in order to reduce waste associated with hose cutting. The lettering height of one-eighth of an inch is considered necessary for clarity and will be retained.

Mack requested confirmation that end fitting labeling may be covered with paint until a person strips off the paint to read the labeling. This interpretation is incorrect. To be useful, label information must be clearly visible for easy reference.

Midland-Ross requested clarification of the use of the letters "SP". These letters distinguish two types of air brake hose: regular 1/2-inch hose and hose that requires special reusable fittings. This is the only situation where different hoses share the same size designation. The NHTSA cannot agree with Midland that wider use of the letters would clarify the use of other components.

Weatherhead challenged as discriminatory the required labeling by manufacturers of hose assemblies other than those assembled and installed by a vehicle manufacturer in vehicles manufactured by him. The argument relied in part on a statutory requirement that "every manufacturer . . . shall furnish to the distributor or dealer at the time of delivery of such vehicle or equipment . . . the certification that . . . [it] conforms . . . in the form of a label or tag . . ." (15 U.S.C. § 1403).

This section covers vehicles and equipment only "at that time of delivery" to a distributor or dealer. In contrast, the exception in question applies to hose assemblies mounted in vehicles by their manufacturers which do not fall under the language of § 1403.

Weatherhead also requested an alternative labeling procedure in place of banding which the NHTSA has determined is not desirable because it detracts from the uniformity of the labeling procedure, and accordingly this petition is denied.

Several manufacturers have requested approval of specific banding techniques, including a molded rubber ring, a metal band crimped together, and an adhesive label which adheres to the hose. The NHTSA interprets a band as a label which encircles the hose completely, and attaches to itself. To constitute labeling at all, the band must, of course, be affixed to the hose in such a manner that it can not be easily removed.

Manufacturers raised objections to the specific performance requirements as they apply to hose types. Manufacturers of hydraulic hose assemblies requested exclusion of various types of end fittings from the constriction requirements to permit L-shaped and T-shaped fittings, distribution blocks, and residual valves, which are designed to have small diameters. The NHTSA

has concluded that the major constriction problems occur in joining the hose to the fitting, and has amended the constriction requirements so that they apply only to that part of the fitting in which hose is inserted.

Weatherhead requested a calibration factor for the expansion test procedure used with hydraulic hose. The NHTSA explained in its last notice that, although calibration factors exist and must be taken into account in any performance test, it is inappropriate to state a calibration factor as part of the performance requirement. Weatherhead's petition is accordingly denied.

Several manufacturers pointed out the inadvertent substitution of "rupture" as the performance requirement to be met in the tensile strength tests of hydraulic hose and air brake hose. This language has been replaced with a requirement of no separation of the end fittings from the hose. With regard to "rupture", it should be noted that the definition of the term was not substantively changed in Notice 10, but only rearranged for clarity.

Another omission has been corrected by the addition of language to the corrosion resistance requirements of air and vacuum brake hose fittings to allow the same displacement of a protective coating which is permitted for hydraulic hose end fittings. It is noted for the benefit of manufacturers who have requested interpretation that discoloration of a brass end fitting is not of itself considered to be corrosion.

Most manufacturers objected to the restrictive elements of Table III, making various arguments for increasing the number of sizes available for use with reusable fittings. Table III, however, is intended to be a first step toward standardization of reusable fittings and hose, and dislocations of former practices must be expected in restricting the choice of available sizes and types. The petitions to eliminate Table III restrictions, or to add new sizes to it, are denied for these reasons. Weatherhead argued that permanent as well as reusable hose should be subject to size limits, but the NHTSA has found that this would be a design restriction without corresponding safety benefit. The hose used with permanent fittings is generally assembled by high volume manufacturers, not repair operations in the field, and the

mismatch problem, to which standardization of reusable hose is addressed, should not occur. The petition is therefore denied.

In response to Parker-Hannifin's inquiry, the NHTSA favors no one fitting type among the choice of reusable air brake fittings.

Stratoflex questioned a leakage requirement in a hydrostatic test of air brake hose when at the same time an air pressure test permits a limited amount of air leakage. The NHTSA makes the distinction on the basis of the rubber composition which permits air but not water to permeate the hose wall.

With regard to vacuum hose requirements, Midland-Ross petitioned for the use of wording in S9.2.9 that appeared in Notice 8, believing it to be more clear than the language substituted for it in Notice 10. On balance, the NHTSA agrees that "adjacent layers" accurately describes heavy as well as light hose construction, and it is re-established. It should be understood that this wording includes separation of the outer cover from the tube.

Toyo Kogyo, in a letter request for interpretation, questioned a language change between the Notice 7 proposal (36 FR 5855, March 30, 1971) and the Notice 8 rule, in S9.2.8. The swell test of vacuum hose called for "no leakage . . . after which there shall be no separation of the inner tube from the fabric reinforcement of the hose." By error, the Notice 8 requirement instead called for no "collapse," which would require absolutely no deformation of the hose in terms of decreased interior diameter. The NHTSA did not intend to increase the requirement and this notice re-establishes the intended performance level. It should be noted that a "no collapse" requirement would have been inconsistent with the shorter vacuum test requirements of S9.2.7.

One manufacturer asked for an explanation of the use of "[Reserved]". This term is used in the Code of Federal Regulations to indicate an omission or deletion, to avoid having to renumber the following units. It does not indicate reservation for any specific purpose.

Several minor changes are made to the standard to correct typographical errors found in Notice 10. It is also noted that the Notice 10

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March 1, 1975  
September 1, 1975

amendment of S5.2.3 appearing in the *Federal Register* appeared to delete paragraph (e), which in fact remains in the standard.

In consideration of the foregoing, both Standard No. 106 (49 CFR 571.106) in its presently effective form, and Standard No. 106-74 (49 CFR 571.106-74) as it is effective September 1, 1974, are amended,

*Effective dates.* September 1, 1974, for brake hose and brake hose end fittings; March 1, 1975,

for brake hose assemblies; September 1, 1975, for vehicles to which the standard applies.

(Secs. 103, 112, 114, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1403, 1407): delegation of authority at 49 CFR 1.51.)

Issued on June 24, 1974.

James B. Gregory  
Administrator

**39 F.R. 24012**  
**June 28, 1974**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 106-74

### Brake Hoses

(Docket No. 1-5; Notice 12)

This notice amends Standard No. 106-74, *Brake hoses*, 49 CFR 571.106-74, to provide that hose assemblies of the same internal diameter are subjected to the same tensile strength requirements. This amendment responds to a petition for reconsideration of the most recent amendments of Standard No. 106-74 (Notice 11) filed by Samuel Moore and Company on July 1, 1974.

The National Highway Traffic Safety Administration (NHTSA) is responding to this petition before considering all other comments on Notice 11 because of the effect of this ruling on Standard No. 121, *Air brake systems*, which becomes effective January 1, 1975, for trailers and March 1, 1975, for trucks and buses. The design and testing of air brake systems for the standard has been based in part on the continued availability and use of  $\frac{3}{8}$ -inch OD plastic tubing, a popular substitute for  $\frac{1}{4}$ -inch ID hose in some tractor-to-trailer applications. Samuel Moore has pointed out that, although  $\frac{3}{8}$ -inch tubing and  $\frac{1}{4}$ -inch hose deliver the same air supply under the same circumstances, Standard No. 106-74 subjects the tubing to greater tensile strength requirements than hose. As a result the tubing may have to be withdrawn from the market because it is unable to meet the higher requirements. Designers of the new air brake systems must know immediately if  $\frac{3}{8}$ -inch tubing can continue to be used.

The NHTSA intends that all brake hose subject to the standard, including traditional rubber hose and the newer plastic tubing, be subject to appropriate tests for the environment and use in which they serve. In this situation  $\frac{3}{8}$ -inch

OD tubing has the equivalent bore of  $\frac{1}{4}$ -inch ID hose. The NHTSA hereby amends the standard, by adding "in nominal internal diameter" to S7.3.10 and S7.3.11 following each size designation, to test these products to the same tensile strength requirements.

A typographical error in Notice 11 which changed the meaning of the tensile strength requirements is corrected here by the addition of parentheses around the phrase "other than a coiled nylon tube assembly which meets the requirements of § 393.45 of this title" appearing in S7.3.10 and S7.3.11.

Additionally, Notice 11 attempted to resolve an ambiguity in Notice 10 concerning the deletion of subparagraph (e) of S5.2.2 of the standard. Notice 11 mistakenly referred to S5.2.3, and it should be noted that, in actuality, it was the Notice 10 amendment of S5.2.2 appearing in the *Federal Register* that appeared to delete paragraph (e), which in fact remains in the standard.

In consideration of the foregoing, Standard No. 106-74 (49 CFR 571.106-74) is amended...

Effective date: March 1, 1975.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on August 2, 1974.

James B. Gregory  
Administrator

**39 F.R. 28436**  
**August 7, 1974**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 106-74

### Brake Hoses

(Docket No. 1-5; Notice 14)

This notice amends Standard No. 106-74, *Brake hoses*, 49 CFR 571.106-74, to permit, for a limited time, the manufacturing of brake hose assemblies which comply with the standard in all respects except that they are constructed with hose or end fittings which do not meet certain labeling requirements.

A notice of proposed rulemaking was published on October 3, 1974 (39 F.R. 35676) (Notice 13), which proposed amendment of the standard to facilitate the depletion of inventories of brake hose that is not properly labeled. All of the comments supported the proposal. Several of those commenting suggested that the proposed temporary exception to the labeling requirements be extended to cover end fittings as well as hose. These manufacturers pointed to large inventories of end fittings, manufactured before September 1, 1974, which meet all of the performance requirements of the standard, but which could not be used because they are not properly labeled. As with the brake hose discussed in Notice 13, safety of performance is not a major issue. The NHTSA has determined that the use of both non-conforming hose and end fittings in assemblies manufactured before September 1, 1975, while it may make enforcement by this agency temporarily more difficult, is appropriate and in the public interest.

In its petition for reconsideration of Notice 11 (39 F.R. 24012, June 28, 1974), Wagner Electric Corporation requested an amendment to permit the labeling of brake hose assemblies with DOT-marked bands in accordance with S5.2.4 before

March 1, 1975, the date assembly labeling becomes effective. The NHTSA takes this opportunity to respond to Wagner's petition ahead of other petitions for reconsideration of Notice 11 in order to clarify the standard's scheme of effective dates.

Even though Standard 106-74 has already been published, there are no requirements in it applicable to air brake hose assemblies or to vacuum brake hose assemblies until March 1, 1975. Consequently, use of the DOT symbol on such assemblies manufactured before that date would be inconsistent with the established meaning of that symbol as a certification of compliance with *applicable* standards. Use of the symbol to indicate "anticipatory compliance", as Wagner has suggested, would foster confusion in both the meaning of the symbol and the concept of the certification required by Section 108(a)(3) of the National Traffic and Motor Vehicle Safety Act of 1966. Accordingly, Wagner's petition is denied.

The problem of excessive inventories of pre-standard hose and end fittings arose from incorrect assumptions about the effective date of the standard as applied to hose assemblies which are not completed until the hose is installed in the vehicle. No parallel misunderstanding can arise with respect to the September 1, 1975 effective date for vehicles, so brake hose assemblers can plan their production schedules accordingly.

In consideration of the foregoing, Standard No. 106-74 (49 CFR 571.106-74) is amended by the addition of a new section . . .

*Effective date:* November 11, 1974. Because this amendment relieves a restriction, the National Highway Traffic Safety Administration finds, for good cause shown, that an immediate effective date is in the public interest.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

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Issued on November 6, 1974.

James B. Gregory  
Administrator

**39 F.R. 39725**  
**November 11, 1974**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 106-74****Brake Hoses****(Docket No. 1-5; Notice 16)**

This notice amends 49 CFR 571.106-74, Standard No. 106-74, *Brake hoses*, by modifying several labeling requirements and the deformation test requirement for vacuum brake hose, in response to petitions for reconsideration of amendments which were published June 28, 1974 (39 F.R. 24012) (Notice 11). Several of the petitions are denied; others requested changes which are outside the scope of a petition for reconsideration, and will be considered as petitions for future rulemaking.

Ford Motor Company petitioned for relaxation of the labeling requirements of the standard as they apply to brake hose end fittings. Recognizing that labeling of all components of an end fitting is not feasible, the NHTSA in Notice 11 interpreted S5.2.3 to require that all unlabeled components of an end fitting be made by the manufacturer whose designation appears on one part. Ford pointed out that, because end fitting components made by different manufacturers and purchased according to the assembler's specifications are virtually interchangeable, this interpretation would preclude the cost saving practice of purchasing individual components from the source offering the most favorable price. Because most of the performance requirements of the standard apply to assemblies, responsibility for noncompliance and for safety defects will usually belong to the assembler. Accordingly, the standard is amended to require labeling on at least one component of an end fitting, thus permitting the practice of mixing parts from different sources to continue as requested by Ford.

Several vehicle manufacturers petitioned for changes in the interpretation of the labeling requirements, to allow labels on hose and end fittings to be obscured by paint or by masking

materials. New information indicates that spray painting of end fittings leaves their labeling visible in most cases and that, in the occasional instances where labeling is obscured, excess paint may be easily scraped off. In addition, painting protects the labels and fittings against corrosion. Therefore, the NHTSA will not consider the painting of end fittings to be a violation of the standard. Painting of hose labels, however, presents different considerations, because removal of paint from a hose may damage both the label and the hose. Therefore, the label on a hose must remain visible after painting unless it is protected by masking which can be removed manually to permit inspection. Because masking material can protect the label from obscuration by road grime, and because the expense required to remove it after painting does not appear justified, hose labels may remain masked after painting provided that the masking material is affixed in such a way that no adhesive contacts any part of the label.

BMW petitioned for a relaxation of the deformation test requirements for wire-reinforced vacuum hose. S9.2.10 in its present form requires a vacuum brake hose to return to 90 percent of its original diameter within 60 seconds after five applications of force as specified in S10.9. The NHTSA has determined that a reduction of the 90 percent figure to 85 percent will facilitate the use of wire-reinforced hose having greater resistance to collapse under vacuum, and is in the public interest. Therefore, BMW's petition is granted.

The Rubber Manufacturers Association (RMA) and Gates Rubber Company requested an exception to the hose labeling requirement for hose lengths shorter than the length of a complete

legend plus the space between legends. These petitions are denied. The NHTSA has no reason to believe the hose labeling cannot be reduced in length to fit virtually any hose length. The 6-inch distance between legends specified in S5.2.2 is a maximum, and for hose which is to be cut into short lengths, this distance can be reduced or eliminated. Also, lettering width may be reduced because there is no width requirement in S5.2.2 for specified lettering. In addition, Notice 11 modified the standard to permit the required information to appear in any order to facilitate hose cutting.

Kugelfischer Georg Schafer & Co. of Germany expressed dissatisfaction with the banding requirement for brake hose assemblies. Requests to eliminate this requirement were responded to in Notice 10 (39 F.R. 7425, February 26, 1974). Kugelfischer also suggested exemption from the banding requirement of assemblers who manufacture both the hose and end fittings in their assemblies. Such an exemption would make it impossible to identify the assembler of a defective or noncomplying assembly in which hose and end fittings were made by the same manufacturer, and to which no band was attached. Therefore the Kugelfischer petition is denied.

Several manufacturers petitioned for substitution of a ball-vacuum test for the adhesion test described in S8.6 in the case of a hose which is reinforced with wire braid. The RMA petitioned for a change in the method of expressing the results of the adhesion test, to permit averaging of the values recorded on the chart. The NHTSA has tentatively found these petitions to have merit, and is considering the issuance of a notice of proposed rulemaking on these subjects.

Several of the petitions requested changes which are outside the scope of a petition for reconsideration of a rule. A petition for reconsideration is appropriate to assert that the petitioner believes that compliance with the rule as issued is not practicable, is unreasonable, or is not in the public interest, and to suggest changes on that basis (49 CFR 553.35(a)). Requests for new requirements that do not contest the appropriateness of the issued ones are properly submitted as petitions for rulemaking. Gates and the RMA petitioned for an amendment of S7.3.3 to require an internal as well as external inspec-

tion of the hose surface after an air brake hose is subjected to the low temperature resistance test of S8.2. Stratoflex petitioned for changes in S7.3.10 and S7.3.11 to require higher tensile strength values for hoses used in certain applications. Stratoflex also petitioned for the addition to S7.3 of a flexion resistance test for air brake hose. The NHTSA considers these requests to merit further consideration and accordingly, the NHTSA will treat these petitions as petitions for rulemaking.

Several inconsistencies resulted from amendments made to the standard in Notice 11. In one case, the modification of the definition of "Permanently attached end fitting" inadvertently changed the requirements for hydraulic brake hose assemblies in S5.1. The modification was not intended to permit use of renewable fittings in hydraulic brake hose assemblies. Accordingly, S5.1 is amended to require that hydraulic brake hose assemblies incorporate only those permanently attached end fittings which are attached by deformation of the fittings about the hose by crimping or swaging. To correct another inadvertent error, S6.7.2(c) is amended to bring the brake fluid compatibility test for hydraulic hose into conformity with the constriction test as changed by Notice 11. In response to an inquiry from BMW, new entries are made in Tables V and VI to cover  $\frac{7}{16}$ -inch diameter vacuum hose. To clarify the meaning of S5.2.2, the words "may appear" in the first paragraph are changed to read "need appear". In addition, several typographical errors have been corrected.

In consideration of the foregoing, Standard No. 106-74 (49 CFR 571.106-74) is amended. . . .

*Effective date:* March 17, 1975. Because these amendments relieve restrictions and create no additional burdens, the NHTSA finds, for good cause shown, that an immediate effective date is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51)

Issued on: March 10, 1975.

Noel C. Bufe  
Acting Administrator

40 F.R. 12088  
March 17, 1975

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 106-74**

**Brake Hoses**

**(Docket No. 1-5; Notice 17)**

This notice delays for 6 months the effective date of the hose label masking requirements of 49 CFR 571.106-74 (Standard No. 106-74 *Brake Hoses*), in order to allow time for public comment on a proposal to eliminate those requirements.

S5.2.2, S7.2, and S9.1 of the standard require certain information to be labeled at intervals of not more than 6 inches on new hydraulic, air, and vacuum brake hose, respectively. Those requirements were effective September 1, 1974, and are unchanged by this notice. S5.2.2, by itself and as incorporated by reference in S7.2 and S9.1, also requires at least one legend of this information to remain either visible after painting and undercoating, or properly masked, on each brake hose in a completed vehicle. This requirement, which as a practical matter requires masking, would become effective September 1, 1975, because it applies to vehicles. The NHTSA intends to propose, in the near future, an amendment of Standard No. 106-74 that would eliminate the requirement entirely. In order to allow time for public comment on the proposal, and to permit vehicle manufacturers to defer preparation for compliance with a requirement which might never become effective, this notice delays

the effective date of the masking requirement. There is no change in the requirement that vehicles manufactured on or after September 1, 1975, be equipped with brake hoses, brake hose end fittings, and brake hose assemblies that comply with the standard.

In consideration of the foregoing, the effective date of the requirement in S5.2.2, S7.2, and S9.1 of 49 CFR 571.106-74 (Standard No. 160-74, *Brake Hoses*), that hose label information remain visible on completed vehicles unless properly masked, is changed to March 1, 1976. Because of the need to allow time for public comment on the prospective proposal to eliminate the requirement, the NHTSA for good cause finds that notice and public procedure on the delay are impracticable and contrary to the public interest.

(Sec. 103, 112, 114, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1407); delegation of authority at 49 CFR 1.15.)

Issued on July 29, 1975.

James B. Gregory  
Administrator

**40 F.R. 32336**  
**August 1, 1975**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 106-74

### Brake Hoses

(Docket No. 1-5; Notice 18)

This notice amends 49 CFR 571.106-74 (Standard No. 106-74, *Brake Hoses*) to permit, until August 31, 1976, the manufacturing of motor vehicles with brake hose, brake hose end fittings, and brake hose assemblies which comply with all requirements of the standard except certain labeling requirements.

In a notice published on June 28, 1974 (39 FR 24012, Docket No. 1-5, Notice 11), the following scheme of effective dates was established: September 1, 1974, for brake hose and brake hose end fittings; March 1, 1975, for brake hose assemblies; and September 1, 1975, for vehicles to which the standard applies. This scheme was designed to permit an orderly phase-in of parts meeting the new standard, by allowing six months at each production stage for the depletion of inventories of non-conforming parts.

After the September 1, 1974, effective date for hose and fittings, it became apparent that, due to a misunderstanding within the industry of the standard's requirements, stocks of hose and end fittings manufactured before that date would not be completely converted into assemblies by the March 1, 1975, effective date for assemblies. Because the only difference between those non-conforming components and hose and fittings manufactured after September 1, 1974, appeared to be one of labeling, the NHTSA added S12 to the standard. That section extended until August 31, 1975, the period during which such components could be used in assemblies, provided that they met all of the standard's performance requirements (30 FR 39725, Docket No. 1-5, Notice 14).

Since the publication of Notice 14, there has been an unforeseen sharp decline in the produc-

tion of new trucks, causing several component manufacturers, distributors, and vehicle manufacturers to have on hand large inventories of hose and end fittings manufactured before September 1, 1974, and of assemblies manufactured from them before March 1, 1975.

A further extension of the time during which these inventories could be exhausted was requested in petitions for rulemaking filed by Parker-Hannifin Corp., Wagner Electric Corp., Aeroquip Corp., Samuel Moore and Co., Freightliner Corp., and PACCAR, Inc. These petitioners indicated that, without such an extension, components valued at several hundred thousand dollars would have to be scrapped, even though they comply fully with all performance requirements of the standard. The petitioners requested extensions ranging from 6 to 18 months.

As with the inventories which were the subject of the Notice 14 amendment, safety of performance is not a major issue. The NHTSA has determined that, while granting these petitions may continue to make enforcement by this agency more difficult until these inventories are depleted, the avoidance of waste in this situation is appropriate and in the public interest. Accordingly, a 1-year extension is granted. It should be noted that this amendment makes no change in the banding requirement for assemblies manufactured on and after March 1, 1975. S13(c) is merely intended to facilitate the exhaustion of stocks of unbanded assemblies which comply with the standard in all other respects.

Because of the imminent effective date of a requirement which would otherwise lead to substantial economic waste, the NHTSA for good cause finds that notice and public procedure on

Effective: August 27, 1975

this amendment are impracticable and contrary to the public interest.

In consideration of the foregoing, 49 CFR 571.106-74 (Standard No. 106-74, *Brake hoses*), is amended . . . .

*Effective date:* August 27, 1975. Because this amendment relieves a restriction, it is found, for good cause shown, that an immediate effective date is in the public interest.

(Sees. 103, 112, 114, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1403, 1407); delegation of authority at 49 CFR 1.51.)

Issued on August 22, 1975.

James B. Gregory  
Administrator

**40 F.R. 38159**  
**August 27, 1975**

## MOTOR VEHICLE SAFETY STANDARD NO. 106-74

### Brake Hoses

**S1. Scope.** This standard specifies labeling and performance requirements for motor vehicle brake hose, brake hose assemblies, and brake hose end fittings.

**S2. Purpose.** The purpose of this standard is to reduce deaths and injuries occurring as a result of brake system failure from pressure or vacuum loss due to hose or hose assembly rupture.

**S3. Application.** This standard applies to passenger cars, multipurpose passenger vehicles, trucks, buses, trailers, and motorcycles, and to hydraulic, air, and vacuum brake hose, brake hose assemblies, and brake hose end fittings for use in those vehicles.

#### **S4. Definitions.**

“Armor” means protective material installed on a brake hose to increase the resistance of the hose or hose assembly to abrasion or impact damage.

【“Brake hose” means a flexible conduit manufactured for use in a brake system to transmit or contain the fluid pressure or vacuum used to apply force to a vehicle’s brakes. (39 F.R. 24012—June 28, 1974. Effective: 9/1/74)】

【“Brake hose assembly” means a brake hose, with or without armor, equipped with end fittings for use in a brake system, but does not include an assembly containing used components. (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)】

“Brake hose end fitting” means a coupler, other than a clamp, designed for attachment to the end of a brake hose.

“Free length” means the linear measurement of hose exposed between the end fittings of a hose assembly in a straight position.

【“Permanently attached end fitting” means an end fitting that is attached by deformation of the fitting about the hose by crimping or swaging, or an end fitting that is attached by use of a sacrificial sleeve or ferrule that requires replacement each time a hose assembly is rebuilt. (39 F.R. 24012—June 28, 1974. Effective: 9/1/74)】

【“Rupture” means any failure that results in separation of a brake hose from its end fitting or in leakage. (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)】

【For hose, a dimensional description such as “1/4-inch hose” refers to the nominal inside diameter. For tubing, a dimensional description such as “1/4-in tubing” refers to the nominal outside diameter. (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)】

#### **S5. Requirements—Hydraulic brake hose, brake hose assemblies, and brake hose end fittings.**

**S5.1 Construction.** Each hydraulic brake hose assembly shall have permanently attached brake hose end fittings which are attached by deformation of the fitting about the hose by crimping or swaging. (40 F.R. 12088—March 17, 1975. Effective: 3/17/75)】

#### **S5.2 Labeling.**

**S5.2.1** Each hydraulic brake hose shall have at least two clearly identifiable stripes of at least one-sixteenth of an inch in width, placed on opposite sides of the brake hose parallel to its longitudinal axis. One stripe may be interrupted by the information required by S5.2.2, and the other stripe may be interrupted by additional information at the manufacturer’s option.

**S5.2.2** 【Each hydraulic brake hose shall be permanently labeled at intervals of not more than 6 inches, measured from the end of one

legend to the beginning of the next, in block capital letters and numerals at least one-eighth of an inch high, with the information listed in paragraphs (a) through (e). In the case of a hose which has been installed by a vehicle manufacturer in vehicles manufactured by him, the information need appear only once and the information may remain masked if (i) the masking material is affixed in such a way that no adhesive contacts any part of the label and (ii) the masking is manually removable. (40 F.R. 32336—August 1, 1975. Effective: 3/1/76)】

(a) The symbol DOT, constituting a certification by the hose manufacturer that the hose conforms to all applicable motor vehicle safety standards.

【(b) A designation that identifies the manufacturer of the hose, which shall be filed in writing with: Office of Crash Avoidance, Handling and Stability Division, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590. The marking may consist of a designation other than block capital letters required by S5.2.2. (40 F.R. 12088—March 17, 1975. Effective: 3/17/75)】

【(c) The month, day, and year, or the month and year, of manufacture, expressed in numerals. For example, 10/1/74 means October 1, 1974. (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)】

【(d) The nominal inside diameter of the hose expressed in inches or fractions of inches, or the nominal outside diameter of the tube expressed in inches or fractions of inches followed by the letters OD. (Example of inside diameter;  $\frac{1}{8}$ ,  $\frac{1}{2}$  ( $\frac{1}{2}$ SP in the case of  $\frac{1}{2}$  inch special air brake hose. Example of outside diameter;  $\frac{1}{4}$  OD.) (39 F.R. 24012—June 28, 1974. Effective: 9/1/74)】

(e) Either "HR" to indicate that the hose is regular expansion hydraulic hose or "HL" to indicate that the hose is low expansion hydraulic hose.

**S5.2.3** 【Except for an end fitting that is attached by deformation of the fitting about a hose by crimping or swaging, at least one component of each hydraulic brake hose fitting shall be permanently etched, embossed, or stamped,

in block capital letters and numerals at least one-sixteenth of an inch high with the following information:

(a) The symbol DOT, constituting a certification by the manufacturer of that component that the component conforms to all applicable motor vehicle safety standards.

(b) A designation that identifies the manufacturer of that component of the fitting, which shall be filed in writing with: Office of Crash Avoidance, Handling and Stability Division, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590. The designation may consist of symbols other than the block capital letters specified by S5.2.2. (40 F.R. 12088—March 17, 1975. Effective: 3/17/75)】

(c) The letter "H" to indicate the fitting is for use in hydraulic hose assemblies.

(d) 【The nominal inside diameter of the hose to which the fitting is properly attached expressed in inches or fractions of inches, or the outside diameter of the tube to which the fitting is properly attached expressed in inches or fractions of inches followed by the letters OD (See examples in S5.2.2(d)). (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)】

**S5.2.4** 【Each hydraulic brake system assembly, except those assembled and installed by a vehicle manufacturer in vehicles manufactured by him, shall be labeled by means of a band around the brake hose assembly. The band may at the manufacturer's option be attached so as to move freely along the length of the assembly, as long as it is retained by the end fittings. The band shall be permanently etched, embossed, or stamped, in block capital letters and numerals at least one-eighth of an inch high, with the following information: (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)】

(a) The symbol DOT, constituting certification by the hose assembler that the hose assembly conforms to all applicable motor vehicle safety standards.

【(b) A designation that identifies the manufacturer of the hose assembly, which shall be filed in writing with: Office of Crash Avoidance, Handling and Stability Division, National Highway Traffic Safety Administration, 400 Seventh

Street, S.W., Washington, D.C. 20590. The marking consist of a designation other than block capital letters required by S5.2.4. (40 F.R. 12088—March 17, 1975. Effective: 3/17/75)】

【(c) The month, day, and year, or the month and year, of assembly, expressed in numerals. For example, 10/1/74 means October 1, 1974. (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)】

**S5.3 Test requirements.** A hydraulic brake hose assembly or appropriate part thereof shall be capable of meeting any of the requirements set forth under this heading, when tested under the conditions of S11 and the applicable procedures of S6. However, a particular hose assembly or appropriate part thereof need not meet further requirements after having been subjected to and having met the constriction requirement (S5.3.1) and any one of the requirements specified in S5.3.2 through S5.3.11.

**S5.3.1 Constriction.** 【Except for that part of an end fitting which does not contain hose, every inside diameter of any section of a hydraulic brake hose assembly shall be not less than 64 percent of the nominal inside diameter of the brake hose. (39 F.R. 24012—June 28, 1974. Effective: 3/1/75)】

**S5.3.2 Expansion and burst strength.** 【The maximum expansion of a hydraulic brake hose assembly at 1,000 psi and 1,500 psi shall not exceed the values specified in Table I (S6.1). The hydraulic brake hose assembly shall then withstand water pressure of 4,000 psi for 2 minutes without rupture, and shall not rupture at less than 5,000 psi (S6.2). 39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)】

**S5.3.3 Whip resistance.** A hydraulic brake hose assembly shall not rupture when run con-

tinuously on a flexing machine for 35 hours (S6.3).

**S5.3.4 Tensile strength.** 【A hydraulic brake hose assembly shall withstand a pull of 325 pounds without separation of the hose from its end fittings (S6.4). (39 F.R. 24015—June 28, 1974. Effective: 3/1/75)】

**S5.3.5 Water absorption and burst strength.** A hydraulic brake hose assembly, after immersion in water for 70 hours (S6.5), shall withstand water pressure of 4,000 psi for 2 minutes, and then shall not rupture at less than 5,000 psi (S6.2).

**S5.3.6 Water absorption and tensile strength.** 【A hydraulic brake hose assembly, after immersion in water for 70 hours (S6.5), shall withstand a pull of 325 pounds without separation of the hose from its end fittings (S6.4). (39 F.R. 24012—June 28, 1974. Effective: 3/1/75)】

**S5.3.7 Water absorption and whip resistance.** A hydraulic brake hose assembly, after immersion in water for 70 hours (S6.5), shall not rupture when run continuously on a flexing machine for 35 hours (S6.3).

**S5.3.8 Low-temperature resistance.** 【A hydraulic brake hose conditioned at minus 40°F. for 70 hours shall not show cracks visible without magnification when bent around a cylinder as specified in S6.6. (S6.6) (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)】

**S5.3.9 Brake fluid compatibility, constriction, and burst strength.** 【Except for brake hose assemblies designed for use with mineral or petroleum-based brake fluids, a hydraulic brake hose assembly shall meet the constriction requirement of S5.3.1 after having been subjected to a temperature of 200°F. for 70 hours while filled with SAE RM-1 compatibility brake fluid (S6.7). It

TABLE 1—Maximum Expansion of Free Length Brake Hose, cc/ft.

Hydraulic Brake Hose, inside diameter	Test Pressure			
	1,000 psi		1,500 psi	
	Regular Expansion Hose	Low Expansion Hose	Regular Expansion Hose	Low Expansion Hose
1/8 inch or less -----	0.66	0.33	0.79	0.42
3/16 inch -----	0.86	0.55	1.02	0.72
1/4 inch or more -----	1.04	0.82	1.30	1.17

Effective: September 1, 1974  
March 1, 1975  
September 1, 1975

shall then withstand water pressure of 4,000 psi for 2 minutes and thereafter shall not rupture at less than 5,000 psi (S6.2). (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)

**55.3.10 Ozone resistance.** A hydraulic brake hose shall not show cracks visible under 7-power magnification after exposure to ozone for 70 hours at 104° F. (S6.8).

**55.3.11 End fitting corrosion resistance.** [After 24 hours of exposure to salt spray, a hydraulic brake hose end fitting shall show no base metal corrosion on the end fitting surface except where crimping or the application of labeling information has caused displacement of the protective coating. (S6.9) (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)]

**56. Test procedures—Hydraulic brake hose, brake hose assemblies, and brake hose end fittings.**

#### 56.1 Expansion test.

**56.1.1 Apparatus.** Utilize a test apparatus (as shown in Figure 1) which consists of:

- Source for required fluid pressure;
- [Test fluid of water without any additives and free of gases. (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)]
- Reservoir for test fluid;
- Pressure gauges;
- Brake hose end fittings in which to mount the hose vertically; and
- Graduated burette with 0.05 cc increments.

#### 56.1.2 Preparation.

- Measure the free length of the hose assembly.
- Mount the hose so that it is in a vertical straight position without tension when pressure is applied.
- Fill the hose with test fluid and bleed all gases from the system.

(d) Close the valve to the burette and apply 1,500 psi for 10 seconds; then release pressure.

#### 56.1.3 Calculation of expansion at 1,000 and 1,500 psi.

(a) Adjust the fluid level in the burette to zero.

(b) Close the valve to the burette, apply pressure at the rate of 15,000 psi per minute, and seal 1,000 psi in the hose (1,500 psi in second series).

(c) After 3 seconds open the valve to the burette for 10 seconds and allow the fluid in the expanded hose to rise into the burette.

(d) Repeat the procedure in steps (b) and (c) twice. Measure the amount of test fluid which has accumulated in the burette as a result of the three applications of pressure.

(e) Calculate the volumetric expansion per foot by dividing the total accumulated test fluid by 3 and further dividing by the free length of the hose in feet.

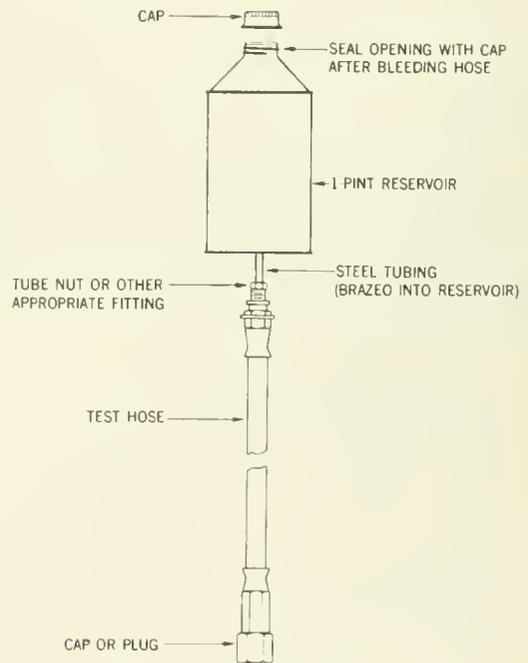


Fig 2-Brake Fluid Compatibility Apparatus

#### 56.2 Burst strength test.

(a) Connect the brake hose to a pressure system and fill it completely with water, allowing all gases to escape.

(b) [Apply water pressure of 4,000 psi at a rate of 15,000 psi per minute. (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)]

(c) After 2 minutes at 4,000 psi, increase the pressure at the rate of 15,000 psi per minute until the pressure exceeds 5,000 psi.

#### 56.3 Whip resistance test.

**S6.3.1 Apparatus.** Utilize test apparatus that is dynamically balanced and includes:

(a) A movable header consisting of a horizontal bar equipped with capped end fittings and mounted through bearings at each end to points 4 inches from the center of two vertically rotating disks whose edges are in the same vertical plane;

(b) An adjustable stationary header parallel to the movable header in the same horizontal plane as the centers of the disks, and fitted with open end fittings;

(c) An elapsed time indicator; and

(d) A source of water pressure connected to the open end fittings.

**S6.3.2 Preparation.**

(a) Remove hose armor, and date band, if any.

(b) Measure the hose free length.

(c) [Mount the hose in the whip test machine introducing slack as specified in Table II for the size hose tested, measuring the projected length parallel to the axis of the rotating disks. The manufacturer may, at his option, adapt the fitting attachment points to permit mounting hose assemblies equipped with angled or other special fittings in the same orientation as hose assemblies equipped with straight fittings. (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)]

**S6.3.3 Operation.**

(a) Apply 235 psi water pressure and bleed all gases from the system.

(b) Drive the movable head at 800 rpm.

**S6.4 Tensile strength test.** Utilize a tension testing machine conforming to the requirements of the methods of Verification of Testing Machines (1964 American Society for Testing and

Materials, Designation E4), and provided with a recording device to give the total pull in pounds.

**S6.4.1 Preparation.** Mount the hose assembly to ensure straight, evenly distributed machine pull.

**S6.4.2 Operation.** Apply tension at a rate of 1 inch per minute travel of the moving head until separation occurs.

**S6.5 Water absorption sequence tests.**

**S6.5.1 Preparation.** Prepare three hose assemblies as follows:

(a) Remove 1 1/8 inches of hose cover, if any, from the center of the hose assemblies without injury to any reinforcing material or elongation of the hose assemblies.

(b) Measure the free length of the hose assemblies.

**S6.5.2 Immersion and sequence testing.**

(a) Immerse the hose assemblies in distilled water for 70 hours.

(b) Thirty minutes after removal from water, conduct tests S6.2, S6.3, and S6.4, using a different hose for each sequence.

**S6.6 Low temperature resistance test.**

**S6.6.1 Preparation.**

(a) [Remove hose armor, if any, and condition a hose in a straight position in air at minus 40°F. for 70 hours. (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)]

(b) [Condition a cylinder in air at minus 40°F. for 70 hours, using a cylinder of 2 1/2 inches in diameter for tests of hose less than 1/8-inch, 3 inches for tests of 1/8-inch hose, 3 1/2 inches for tests of 3/16-inch and 1/4-inch hose,

TABLE II—Hose Lengths

Free length between end fittings, in.	Slack, in.	
	1/8 in. hose or less	more than 1/8 in. hose
8 to 15 1/2, inclusive	1.750	-----
10 to 15 1/2, inclusive	-----	1.000
Over 15 1/2 to 19 inclusive	1.250	-----
Over 19 to 24, inclusive	0.750	-----

[(39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)]

and 4 inches for tests of hose greater than 1/4-inch in diameter. (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)】

**S6.6.2 Flexibility testing.** 【Bend the conditioned hose 180 degrees around the conditioned cylinder at a steady rate in a period of 3 to 5 seconds. Examine without magnification for cracks. (39 F.R. 7425—February 26, 1974. Effective 9/1/74 & 1/1/75)】

### S6.7 Brake fluid compatibility test.

#### S6.7.1 Preparation.

(a) 【Attach a hose assembly below a 1-pint reservoir filled with 100 ml of SAE RM 1 Compatibility Fluid as shown in Figure 2. (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)】

(b) Fill the hose assembly with brake fluid, seal the lower end, and place the test assembly in an oven in a vertical position.

#### S6.7.2 Oven treatment.

(a) Condition the hose assembly at 200° F. for 70 hours.

(b) Cool the hose assembly at room temperature for 30 minutes.

(c) 【Drain the brake hose assembly, immediately determine that every inside diameter of any section of the hose assembly, except for that part of an end fitting which does not contain hose, is not less than 64 percent of the nominal inside diameter of the hose, and conduct the test specified in S6.2. (40 F.R. 12088—March 17, 1975. Effective: 3/17/75)】

**S6.8 Ozone resistance test.** Utilize a cylinder with a diameter eight times the nominal outside diameter of the brake hose excluding armor.

**S6.8.1 Preparation.** 【After removing any armor, bind a hydraulic brake hose 360° around the cylinder. In the case of hose shorter than the circumference of the cylinder, bend the hose so that as much of its length as possible is in contact. (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)】

#### S6.8.2 Exposure to ozone.

(a) Condition the hose on the cylinder in air at room temperature for 24 hours.

(b) Immediately thereafter, condition the hose on the cylinder for 70 hours in an exposure chamber having an ambient air temperature of 104° F. during the test and containing air mixed with ozone in the proportion of 50 parts of ozone per 100 million parts of air by volume.

(c) Examine the hose for cracks under 7-power magnification, ignoring areas immediately adjacent to or within the area covered by binding.

**S6.9 End fitting corrosion resistance test.** Utilize the apparatus described in ASTM B117-64, "Salt Spray (Fog) Testing".

**S6.9.1 Construction.** Construct the salt spray chamber so that:

(a) The construction material does not affect the corrosiveness of the fog.

(b) The hose assembly is supported or suspended 30° from the vertical and parallel to the principal direction of the horizontal flow of fog through the chamber.

(c) The hose assembly does not contact any metallic material or any material capable of acting as a wick.

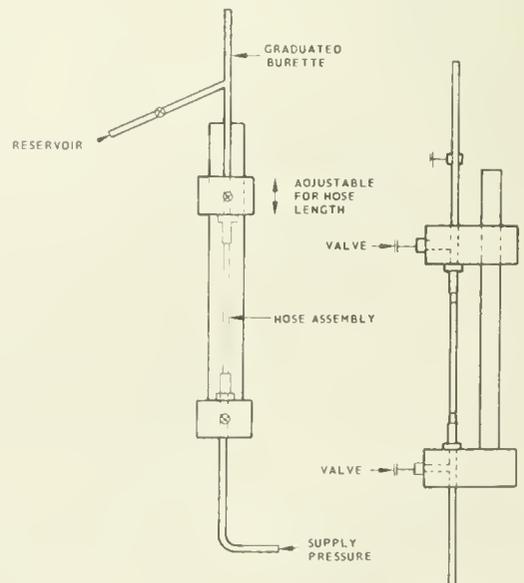


Fig. 1-Expansion Test Apparatus

(d) Condensation which falls from the assembly does not return to the solution reservoir for respraying.

(e) Condensation from any source does not fall on the brake hose assemblies or the solution collectors.

(f) Spray from the nozzles is not directed onto the hose assembly.

**S6.9.2 Preparation.**

(a) Plug each end of the hose assembly.

(b) Mix a salt solution five parts by weight of sodium chloride to 95 parts of distilled water, using sodium chloride substantially free of nickel and copper, and containing on a dry basis not more than 0.1 percent of sodium iodide and not more than 0.3 percent total impurities. Ensure that the solution is free of suspended solids before the solution is atomized.

(c) After atomization at 95° F. ensure that the collected solution is in the PH range of 6.5 to 7.2. Make the PH measurements at 77° F.

(d) Maintain a compressed air supply to the nozzle or nozzles free of oil and dirt and between 10 and 25 psi.

**S6.9.3 Operation.** Subject the brake hose assembly to the salt spray continuously for 24 hours.

(a) Regulate the mixture so that each collector will collect from 1 to 2 ml. of solution per hour for each 80 square centimeters of horizontal collecting area.

(b) Maintain exposure zone temperature at 95° F.

(c) Upon completion, remove the salt deposit from the surface of the hoses by washing gently or dipping in clean running water not warmer than 100° F. and then drying immediately.

**S7. Requirements—Air brake hose, brake hose assemblies, and brake hose end fittings.**

**S7.1 Construction.** [Each air brake hose assembly shall be equipped with permanently attached brake hose end fittings or reusable brake hose end fittings. Each air brake hose intended for use with reusable end fittings shall conform to the dimensional requirements specified in Table III. (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)]

**S7.2 Labeling.** [Each air brake hose, brake hose assembly, and brake hose end fitting shall be labeled as specified in S5.2 except for the requirements of S5.2.1, S5.2.2(e) and S5.2.3(c). Instead of "H", "HR", or "HIL", the letter "A" shall indicate intended use in air brake systems. In the case of a hose intended for use in a reusable assembly, "AI" or "AII" shall indicate Type I or Type II dimensional characteristics of the

TABLE III—Air Brake Hose Dimensions for Reusable Assemblies

Size, inches	Inside Diameter Tolerance, inches	TYPE I		TYPE II	
		O.D., inches Min	O.D., inches Max	O.D., inches Min	O.D., inches Max
3/16	+0.026 -0.000	0.472	0.510	0.500	0.539
1/4	+0.031 -0.000	0.535	0.573	0.562	0.602
5/16	+0.031 -0.000	0.598	0.636	0.656	0.695
3/8	±0.023	0.719	0.781	0.719	0.781
13/32	+0.031 -0.000	0.714	0.760	0.742	0.789
1/2	+0.039 -0.000	0.808	0.854	0.898	0.945
5/8	+0.042 -0.000	0.933	0.979	1.054	1.101
1/2 special	±0.031	0.844	0.906	0.844	0.906

[ (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75) ]

hose as described in Table III. In the case of an end fitting intended for use in a reusable assembly, "AI" or "AII" shall indicate use with Type I or Type II hose respectively. (40 F.R. 32336—August 1, 1975. Effective: 3/1/76) ]

**57.3 Test requirements.** Each air brake hose assembly or appropriate part thereof shall be capable of meeting any of the requirements set forth under this heading, when tested under the conditions of S11 and the applicable procedures of S8. However, a particular hose assembly or appropriate part thereof need not meet further requirements after having met the constriction requirement (S7.3.1) and then having been subjected to any one of the requirements specified in S7.3.2 through S7.3.13.

**57.3.1 Constriction.** [Except for that part of an end fitting which does not contain hose, every inside diameter of any section of an air brake hose assembly shall be not less than 66 percent of the nominal inside diameter of the brake hose. (39 F.R. 24012—June 28, 1974. Effective: 3/1/75) ]

**57.3.2 High temperature resistance.** An air brake hose shall not show external or internal cracks, charring, or disintegration visible without magnification when straightened after being bent for 70 hours at 212° F. over a cylinder having the radius specified in Table IV for the size of hose tested (S8.1).

**57.3.3 Low temperature resistance.** The outer cover of an air brake hose shall not show cracks visible without magnification as a result of conditioning at minus 40° F. for 70 hours when bent around a cylinder having the radius specified in Table IV for the size of hose tested (S8.2).

**57.3.4 Oil resistance.** After immersion in ASTM No. 3 oil for 70 hours at 212° F. the volume of a specimen prepared from the inner tube and cover of an air brake hose shall not increase more than 100 percent (S8.3).

**57.3.5 Ozone resistance.** The outer cover of an air brake hose shall not show cracks visible under 7-power magnification after exposure to ozone for 70 hours at 104° F. (S8.4).

**57.3.6 Length change.** An airbrake hose shall not contract in length more than 7 percent nor elongate more than 5 percent when subjected to air pressure of 200 psi (S8.5).

**57.3.7 Adhesion.** An airbrake hose shall withstand a tensile force of 8 pounds per inch of length before separation of adjacent layers (S8.6).

**57.3.8 Air pressure.** An air brake hose assembly shall contain air pressure of 200 psi for 5 minutes without loss of more than 5 psi (S8.7).

**57.3.9 Burst strength.** [An air brake hose assembly shall not rupture when exposed to hydrostatic pressure of 800 psi (S8.8). (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75) ]

**57.3.10 Tensile strength.** [An air brake hose assembly (other than a coiled nylon tube assembly which meets the requirements of § 393.45 of this title) designed for use between frame and axle or between a towed and a towing vehicle shall withstand, without separation of the hose from its end fittings, a pull of 250 pounds if it is ¼ in. or less in nominal internal diameter, or a pull of 325 pounds if it is larger than ¼ in. in nominal internal diameter. An air brake hose assembly designed for use in any other application shall withstand, without separation of the hose from its end fitting, a pull of 50 pounds if it is ¼ in. or less in nominal internal diameter, 150 pounds if it is ⅜ or ½ in. in nominal internal diameter, or 325 pounds if it is larger than ½ in. in nominal internal diameter (S8.9). (39 F.R. 28436—August 7, 1974. Effective: 3/1/75) ]

**57.3.11 Water absorption and tensile strength.** [After immersion in distilled water for 70 hours (S8.10), an air brake hose assembly (other than a coiled tube assembly which meets the requirements of § 393.45 of this title) designed for use between frame and axle or between a towed and a towing vehicle shall withstand without separation of the hose from its end fittings a pull of 250 pounds if it is ¼ in. or less in nominal internal diameter, or a pull of 325 pounds if it is larger than ¼ in. in nominal internal diameter. After immersion in distilled water for 70 hours (S8.10), an air brake hose assembly designed for use in any other application shall withstand without separation of the hose from its end fittings a pull of 50 pounds if it is ¼ in. or less in nominal internal diameter, 150 pounds if it is ⅜ or ½ in. in nominal internal diameter, or 325 pounds if it is larger than ½ in. in nominal internal diameter (S8.9). (39 F.R. 28436—August 7, 1974. (Effective: 3/1/75) ]

TABLE IV—Air Brake Hose Diameters and Test Cylinder Radii

Hose, nominal diameter in inches	1/8	3/16	1/4	5/16	3/8	13/32	7/16	1/2	5/8
Radius of test cylinder in inches	1 1/2	2	2 1/2	3	3 1/2	3 1/2	4	4	4 1/2

**57.3.12 Zinc chloride resistance.** The outer cover of an air brake hose shall not show cracks visible under 7-power magnification after immersion in a 50 percent zinc chloride aqueous solution for 200 hours (S8.11).

**57.3.13 End fitting corrosion resistance.** [After 24 hours of exposure to salt spray, air brake hose end fittings shall show no base metal corrosion on the end fitting surface except where crimping or the application of labeling information causes a displacement of the protective coating. (39 F.R. 24012—June 28, 1974. Effective: 9/1/74)]

**58. Test procedures—Air brake hose, brake hose assemblies, and brake hose end fittings.**

**58.1 High temperature resistance test.**

(a) Utilize a cylinder having the radius indicated in Table IV for the size of hose tested.

(b) Bind the hose around the cylinder and condition it in an air oven for 70 hours at 212° F.

(c) Cool the hose to room temperature, remove it from the cylinder and straighten it.

(d) Without magnification, examine the hose externally and cut the hose lengthwise and examine the inner tube.

**58.2 Low temperature resistance test.**

(a) Utilize a cylinder having the radius indicated in Table IV for the size of hose tested.

(b) Condition the cylinder and the brake hose, in a straight position, in a cold box at minus 40° F. for 70 hours.

(c) With the hose and cylinder at minus 40° F., bend the hose 180 degrees around the cylinder at a steady rate in a period of 3 to 5 seconds.

**58.3 Oil resistance test.** Utilize three test specimens and average the results.

**58.3.1 Preparation.** [Fashion a test specimen by cutting a rectangular block 2 inches long and not less than one-third of an inch in width, having a thickness of not more than one-sixteenth

inch, from the brake hose and buff the specimen on both faces to ensure smooth surfaces. (39 F.R. 7425—February 26, 1974. Effective: 9/1/74 & 1/1/75)]

**58.3.2 Measurement.**

(a) Weigh each specimen to the nearest milligram in air (W1) and in distilled water (W2) at room temperature. If wetting is necessary to remove air bubbles, dip the specimen in acetone and thoroughly rinse it with distilled water.

(b) Immerse each specimen in ASTM No. 3 oil for 70 hours at 212° F. and then cool in ASTM No. 3 oil at room temperature for 30 to 60 minutes.

(c) Dip the specimen quickly in acetone and blot it lightly with filter paper.

(d) Weigh each specimen in a tared weighing bottle (W3) and in distilled water (W4) within five minutes of removal from the cooling liquid.

(e) Calculate the percentage increase in volume as follows:

$$\text{Percent of increase} = \frac{(W_3 - W_4) - (W_1 - W_2)}{(W_1 - W_2)} \times 100$$

**58.4 Ozone resistance test.** Conduct the test specified in S6.8 using air brake hose.

**58.5 Length change test.**

(a) Position a test hose in a straight, horizontal position, and apply air pressure of 10 psi thereto.

(b) Measure the hose to determine original free length.

(c) Without releasing the 10 psi, raise the air pressure to the test hose to 200 psi.

(d) Measure the hose under 200 psi to determine final free length. An elongation or contraction is an increase or decrease, respectively, in the final free length from the original free length of the hose.

**58.6 Adhesion test.**

**S8.6.1 Apparatus.** Utilize a power-driven apparatus of the inclination balance or pendulum type which is constructed so that:

(a) The recording head includes a freely rotating form with an outside diameter substantially the same as the inside diameter of the hose specimen to be placed on it.

(b) The freely rotating form is mounted so that its axis of rotation is in the plane of the ply being separated from the specimen and so that the applied force is perpendicular to the tangent of the specimen circumference at the line of separation.

(c) The rate of travel of the power-actuated grip is a uniform 1 inch per minute and the capacity of the machine is such that maximum applied tension during the test is not more than 85 percent nor less than 15 percent of the machine's rated capacity.

(d) The machine operates with no device for maintaining maximum load indication, and in a pendulum type machine, the weight level swings as a free pendulum without engagement of pawls.

(e) The machine produces a chart with inches of separation as one coordinate and applied tension as the other.

#### **S8.6.2 Preparation.**

(a) Cut a test specimen of 1 inch or more in length from the hose to be tested and cut the layer to be tested of that test specimen longitudinally along its entire length to the level of contact with the adjacent layer.

(b) Peel the layer to be tested from the adjacent layer to create a flap large enough to permit attachment of the power-actuated clamp of the apparatus.

(c) Mount the test specimen on the freely rotating form with the separated layer attached to the power-actuated clamp.

#### **S8.6.3 Operation.** [Reserved]

#### **S8.6.4 Calculations.**

(a) The adhesion value shall be the minimum force recorded on the portion of the chart corresponding to the actual separation of the part being tested.

(b) Express the force in pounds per inch of length.

#### **S8.7 Air pressure test.**

(a) Connect the air brake hose assembly to a source of air pressure.

(b) Apply 200 psi air pressure to the hose and seal the hose from the source of air pressure.

(c) After 5 minutes, determine the air pressure remaining in the test specimen.

#### **8.8 Burst strength test.**

(a) Utilize an air brake hose assembly.

(b) Fill the hose assembly with water, allowing all gases to escape. Apply water pressure at a uniform rate of increase of approximately 1,000 psi per minute until the hose ruptures.

**S8.9 Tensile strength test.** Utilize a tension testing machine conforming to the requirements of the Methods of Verification of Testing Machines (1964 American Society for Testing and Materials, Designation E4), and provided with a recording device to register total pull in pounds.

(a) Attach an air brake hose assembly to the testing machine to permit straight, even, machine-pull on the hose.

(b) Apply tension at a rate of 1 inch per minute travel of the moving head until separation occurs.

**S8.10 Water absorption and tensile strength test.** Immerse an air brake hose assembly in distilled water at room temperature for 70 hours. Thirty minutes after removal from the water, conduct the test specified in S8.9.

**S8.11 Zinc chloride resistance test.** Immerse an air brake hose in a 50 percent zinc chloride aqueous solution at room temperature for 200 hours. Remove it from the solution and examine it under 7-power magnification for cracks.

**S8.12 End fitting corrosion resistance test.** Conduct the test specified in S6.9 using an air brake hose assembly.

**S9. Requirements—vacuum brake hose, brake hose assemblies, and brake hose end fittings.**

**9.1 Labeling.** [Each vacuum brake hose, brake hose assembly, and brake hose end fitting shall be labeled as specified in S5.2 except for the requirements of S5.2.1, S5.2.2(e) and S5.2.3(c). In lieu of "H", "HR", or "HL", the letters "VL" or "VH" shall indicate respectively that the component is a light-duty vacuum brake

TABLE V—Vacuum Brake Hose Test Requirements

Hose—Inside diameter, ins.	High Temperature Resistance		Low Temperature Resistance		Bend		Deformation
	Hose Length, inches	Radius of Cylinder, inches	Hose Length, Inches	Radius of Cylinder, Inches	Hose Length, inches	Max. Collapse of OD, inches	Collapsed ID (dimension D), inches
7/32	8	1½	17½	3	7	11/64	3/64
1/4	9	1½	17½	3	8	3/32	1/16
9/32	9	1¾	19	3½	9	12/64	4/64
1½/32	9	1¾	19	3½	11	13/64	5/64
3/8	10	1¾	19	3½	12	5/32	3/32
7/16	11	2	20½	4	14	17/64	5/64
15/32	11	2	20½	4	14	17/64	5/64
1/2	11	2	20½	4	16	7/32	1/8
5/8	12	2¼	22	4½	22	7/32	5/32
3/4	14	2½	24	5	28	7/32	3/16
1.0	16	3¼	28½	6½	36	9/32	¼

(40 F.R. 12088—March 17, 1975. Effective: 3/17/75)

hose or heavy-duty vacuum brake hose or an end fitting intended for use in a light-duty or heavy-duty vacuum brake system. (40 F.R. 32336—August 1, 1975. Effective: 3/1/76)

**S9.2 Test requirements.** Each vacuum brake hose assembly or appropriate part thereof shall be capable of meeting any of the requirements set forth under this heading, when tested under the conditions of S11 and the applicable procedures of S10. However, a particular hose assembly or appropriate part thereof need not meet further requirements after having met the constriction requirement (S9.2.1) and then having been subjected to any one of the requirements specified in S9.2.2 through S9.2.11.

**S9.2.1 Constriction.** [Except for that part of an end fitting which does not contain hose, every inside diameter of any section of a vacuum brake hose assembly shall be not less than 75 percent of the nominal inside diameter of the hose if for heavy duty, or 70 percent of the nominal inside diameter of the hose if for light duty. (39 F.R. 24012—June 28, 1974. Effective: 3/1/75)]

**S9.2.2 High temperature resistance.** A vacuum brake hose shall not show external or internal cracks, charring, or disintegration visible without magnification when straightened after being bent for 70 hours at 212° F. over a cylinder

having the radius specified in Table V for the size of hose tested (S10.1).

**S9.2.3 Low temperature resistance.** A vacuum brake hose shall not show cracks visible without magnification after conditioning at minus 40° F. for 70 hours when bent around a cylinder having the radius specified in Table V for the size hose tested (S10.2).

**S9.2.4 Ozone resistance.** A vacuum brake hose shall not show cracks visible under 7-power magnification after exposure to ozone for 70 hours (S10.3).

**S9.2.5 Burst strength.** A vacuum brake hose shall not rupture under hydrostatic pressure of 350 psi (S10.4).

**S9.2.6 Vacuum.** The collapse of the outside diameter of a vacuum brake hose under internal vacuum of 26 inches of Hg. for five minutes shall not exceed one-sixteenth of an inch (S10.5).

**S9.2.7 Bend.** The collapse of the outside diameter of a vacuum brake hose at the middle point of the test length when bent until the ends touch shall not exceed the values given in Table V for the size of hose tested (S10.6).

**S9.2.8 Swell.** [Following exposure to Reference Fuel A, every inside diameter of any section of a vacuum brake hose shall be not less than 75 percent of the nominal inside of the hose if for heavy duty, or 70 percent of the nominal

inside diameter of the hose if for light duty. The vacuum brake hose shall show no leakage and there shall be no separation of the inner tube from the fabric reinforcement of the hose in a vacuum test of 26 inches of Hg for 10 minutes (S10.7). (39 F.R. 24012—June 28, 1974. Effective: 9/1/74)】

**S9.2.9 Adhesion.** 【A vacuum brake hose shall withstand a force of 8 pounds per inch of length before separation of adjacent layers (S10.8). (39 F.R. 24012—June 28, 1974. Effective: 9/1/74)】

**S9.2.10 Deformation.** 【A vacuum brake hose shall return to 90 percent of its original outside diameter within 60 seconds after five applications of force as specified in S10.9, except that a wire-reinforced hose need only return to 85 percent of its original outside diameter. In the case of heavy-duty hose the first application of force shall not exceed a peak value of 70 pounds, and the fifth application of force shall reach a peak value of at least 40 pounds. In the case of light-duty hose the first application of force shall not exceed a peak value of 50 pounds, and the fifth application of force shall reach a peak value of at least 20 pounds (S10.9). (40 F.R. 12088—March 17, 1975. Effective: 3/17/75)】

**S9.2.11 End fitting corrosion resistance.** 【After 24 hours of exposure to salt spray, vacuum brake hose end fittings shall show no base metal corrosion of the end fitting surface except where crimping or the application of labeling informa-

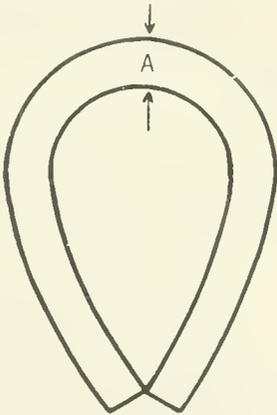


Fig. 3—Bend Test of Vacuum Brake Hose.

tion has caused displacement of the protective coating. (39 F.R. 24012—June 28, 1974. Effective: 9/1/74)】

**S10. Test procedures—Vacuum brake hose, brake hose assemblies, and brake hose end fittings.**

**S10.1 High temperature resistance test.** Conduct the test specified in S8.1 using vacuum brake hose with the cylinder radius specified in Table V for the size of hose tested.

**S10.2 Low temperature resistance test.** Conduct the test specified in S8.2 using vacuum brake hose with the cylinder radius specified in Table V for the size of hose tested.

**S10.3 Ozone resistance test.** Conduct the test specified in S6.8 using vacuum brake hose.

**S10.4 Burst strength test.** Conduct the test specified in S8.8 using vacuum brake hose.

**S10.5 Vacuum test.** Utilize a 12-inch vacuum brake hose assembly sealed at one end.

(a) Measure the hose outside diameter.

(b) Attach the hose to a source of vacuum and subject it to a vacuum of 26 inches of Hg. for 5 minutes.

(c) Measure the hose to determine the minimum outside diameter while the hose is still subject to vacuum.

**S10.6 Bend Test.**

(a) Bend a vacuum brake hose, of the length prescribed in Table V, in the direction of its normal curvature until the ends just touch as shown in Figure 3.

(b) Measure the outside diameter of the specimen at point A before and after bending.

(c) The difference between the two measurements is the collapse of the hose outside diameter on bending.



Fig 4—Deformed Specimen of Vacuum Brake Hose.

TABLE VI  
 Dimensions of Test Specimen and Feeler Gage for Deformation Test

Inside Diameter of Hose (inch)	Specimen Dimensions (see Fig. 4)		Feeler Gage Dimensions	
	D (inch)	L (inch)	Width	Thickness
			(inch)	(inch)
7/32	3/64	1	1/8	3/64
1/4	1/16	1	1/8	1/16
9/32	1/16	1	1/8	1/16
11/32	5/64	1	3/16	5/64
3/8	3/32	1	3/16	3/32
7/16	5/64	1	1/4	5/64
15/32	5/64	1	1/4	5/64
1/2	1/8	1	1/4	1/8
5/8	5/32	1	1/4	5/32
3/4	3/16	1	1/4	3/16
1.0	1/4	1	1/4	1/4

(40 F.R. 12088—March 17, 1975. Effective: 3/17/75)

### 510.7 Swell test.

(a) Fill a specimen of vacuum brake hose 12 inches long with Reference Fuel A as described in the Method of Test for Change in Properties of Elastomeric Vulcanizers Resulting From Immersion in Liquids (1964 American Society for Testing and Materials, Designation D471).

(b) Maintain reference fuel in the hose under atmospheric pressure at room temperature for 48 hours.

(c) Remove fuel and determine that every inside diameter of any section of the brake hose is not less than 75 percent of the nominal inside diameter of the hose for heavy-duty hose and 70 percent of the nominal inside diameter of the hose for light-duty hose.

(d) Subject the hose specimen to a vacuum of 26 inches of Hg. for 10 minutes.

**510.8 Adhesion test.** Conduct the test specified in S8.6 using vacuum brake hose.

**510.9 Deformation test.** Table VI specifies the test specimen dimensions.

**510.9.1 Apparatus.** Utilize a compression device, equipped to measure force of at least 100 pounds, and feeler gages of sufficient length to be passed completely through the test specimen.

#### 510.9.2 Operation.

(a) Position the test specimen longitudinally in the compression device with the fabric laps not in the line of the applied pressure.

(b) Apply gradually increasing force to the test specimen to compress its inside diameter to that specified in Table VI (dimension D of figure 4) for the size of hose tested.

(c) After 5 seconds release the force and record the peak load applied.

(d) Repeat the procedure four times permitting a 10-second recovery period between load applications.

**510.10 End fitting corrosion resistance test.** Conduct the test specified in S6.9 using a vacuum brake hose assembly.

**511. Test conditions.** Each hose assembly or appropriate part thereof shall be able to meet the requirements of S5, S7, and S9 under the following conditions.

**511.1** The temperature of the testing room is 75° F.

**511.2** Except for S6.6, S8.2, and S10.2, the test samples are stabilized at test room temperature prior to testing.

**511.3** The brake hoses and brake hose assemblies are at least 24 hours old, and unused.

**[5i2. Brake hose assemblies manufactured from March 1, 1975, to August 31, 1976.** Notwithstanding any other provision of this standard, a brake hose assembly manufactured during

Effective: September 1, 1974  
March 1, 1975  
September 1, 1975

the period from March 1, 1975 to August 31, 1976, shall meet each requirement of this standard, except that the assembly may be constructed of brake hose which meets every requirement of the standard for hose other than the hose labeling requirements of S5.2, S7.2, and S9.1, and the assembly may be constructed of end fittings which meet every requirement of the standard for end fittings other than the end fitting labeling requirements of S5.2, S7.2, and S9.1. (40 F.R. 38159—August 27, 1975. Effective: 8/27/75)】

**[513. Vehicles manufactured from September 1, 1975 to August 31, 1976.** Notwithstanding any other provision of this standard, a vehicle to which this standard applies which is manufactured during the period from September 1, 1975, to August 31, 1976, shall be equipped with brake hose, brake hose end fittings, and brake

hose assemblies that meet each requirement of this standard, with the following exceptions:

(a) The vehicle may be equipped with brake hose that meets every requirement of the standard for hose other than the hose labeling requirements of S5.2, S7.2, and S9.1;

(b) The vehicle may be equipped with end fittings that meet every requirement of the standard for end fittings other than the end fitting labeling requirements of S5.2, S7.2, and S9.1; and

(c) The vehicle may be equipped with brake hose assemblies that meet every requirement of the standard for assemblies other than the assembly labeling requirements of S5.2, S7.2, and S9.1. (40 F.R. 38159—August 27, 1975. Effective: 8/27/75)】

**38 F.R. 31302  
November 13, 1973**

**MOTOR VEHICLE SAFETY STANDARD NO. 106**  
**Hydraulic Brake Hoses—Passenger Cars and Multipurpose**  
**Passenger Vehicles**

**S1. Purpose and scope.** This standard specifies requirements for hydraulic brake hoses that will reduce brake failures due to fluid leakage.

**S2. Application.** This standard applies to hydraulic brake hoses for use in passenger cars and multipurpose passenger vehicles.

**S3. Requirements.** Hydraulic brake hoses shall meet the requirements of Society of Automotive Engineers Standard J40b, "Automotive Brake Hoses," July 1966, except as follows:

(a) Delete "Water Absorption Test."

(b) Add "viscose" and "polyester" to acceptable braid materials.

(c) Specify the following dates for referenced ASTM tests:

(1) ASTM D 571—1955; and

(2) ASTM B 117—1964.

(d) Revise "End Connections" paragraph to read:

"Exposed steel or brass end connections of the hose assembly shall be protected against rust or corrosion."

**S4. Optional compliance.** [Hydraulic brake hose may meet the requirements of this standard or, at the option of the manufacturer, until September 1, 1974, the requirements of Standard No. 106-74, *Brake hoses* (49 CFR 571.106-74). (39 F.R. 24012—June 28, 1974. Effective: 9/1/74, 3/1/75 & 9/1/75)]

**32 F.R. 2411**  
**February 3, 1967**



**MOTOR VEHICLE SAFETY STANDARD NO. 107**  
**Reflecting Surfaces—Passenger Cars, Multipurpose Passenger**  
**Vehicles, Trucks, and Buses**

**51. Purpose and scope.** This standard specifies reflecting surface requirements for certain vehicle components in the driver's field of view.

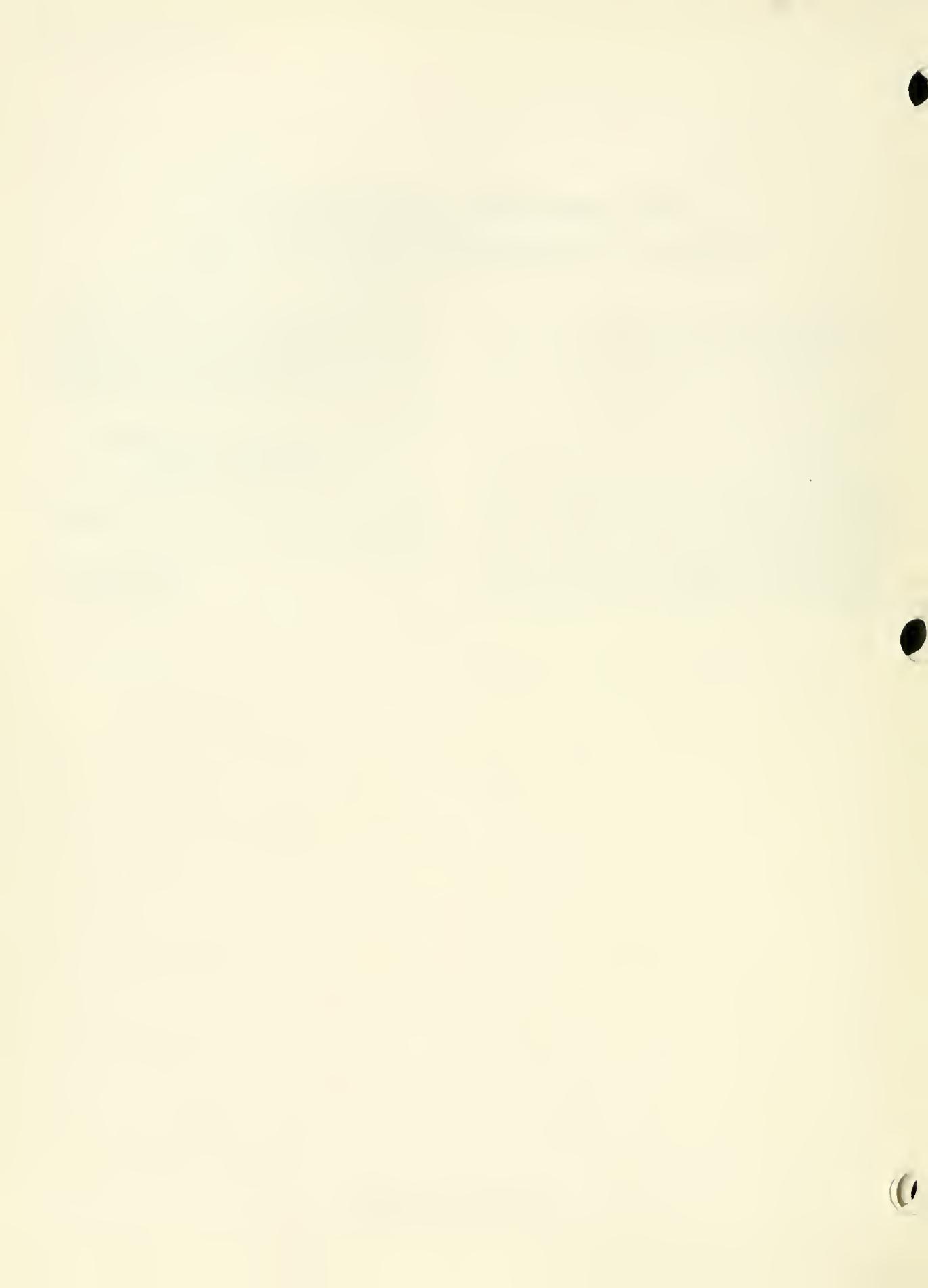
**52. Application.** This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses.

**53. Definitions.** "Field of view" means the area forward of a lateral vertical plane which is located tangent to the rearmost boundary of the SAE 99th percentile eye range contour of SAE Recommended Practice J941, November 1965. "Specular gloss" means the luminous fractional reflectance of a specimen at the specular direction.

**54. Requirements.** The specular gloss of the surface of the materials used for the following bright metal components in the driver's field of view shall not exceed 40 units when measured by the 20° method of ASTM Standard D523-62T, June 1962—

- (a) Windshield wiper arms and blades;
- (b) Inside windshield mouldings;
- (c) Horn ring and hub of steering wheel assembly; and
- (d) Inside rearview mirror frame and mounting bracket.

**32 F.R. 2411**  
**February 3, 1967**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses, Trailers and Motorcycles

(Docket No. 69-18)

On January 3, 1970, a proposal to amend Federal Motor Vehicle Safety Standard No. 108 (Docket No. 69-18) was published in the *Federal Register* (35 F.R. 106). Comments were requested on 25 proposed amendments.

Interested persons have been afforded an opportunity to participate in the rulemaking process and their comments have been considered in the amendments published today. Except as otherwise noted, the amendments are effective July 1, 1971. The amendments are discussed below in the order in which the proposals were published. Unless otherwise indicated, there were no significant objections to the proposals that are being adopted.

(a) It was proposed that Standard No. 108 be extended to include requirements for replacement lighting equipment on vehicles manufactured to comply with Standard No. 108, and all replacement sealed beam headlamp units, lamp bulbs, and plastic lenses.

The proposal to include replacement equipment on vehicles manufactured on or after the effective date of the standard (July 1, 1971) has been adopted. However, the proposal to include all replacement sealed beam headlamp units, lamp bulbs, and plastic lenses on vehicles manufactured prior to that date has been deferred because of the difficulties involved in retrofitting vehicles that were not originally manufactured to conform to Standard No. 108. Further study is necessary of the problems, leadtime, and costs

involved in designing and testing replacement equipment for older vehicles that meets the standards required of motor vehicles manufactured today.

(b) The present intermediate side marker device requirement covering vehicles 30 feet or more in overall length, and 80 inches and more in overall width, has been extended to cover vehicles of lesser width.

Commenters requested that the overall length of a trailer be interpreted to exclude the length of the trailer tongue. However, it has been determined that when the rear of a trailer is 30 feet or more from the towing vehicle, intermediate side marker devices are warranted, regardless of the length of the trailer tongue.

(c) SAE Standard J594d, "Reflex Reflectors", has replaced J594c as the basic reference for this item of lighting equipment. Some commenters felt that Class B reflectors (eliminated in J594d) should still be permitted for motorcycles, but the Bureau believes that a motor vehicle whose conspicuity is already marginal should be required to have Class A reflectors.

(d) Self-canceling turn signal operating units will be required on all vehicles less than 80 inches in overall width. One commenter requested excluding all trucks, truck tractors, and commercial vehicles regardless of vehicle width, and several commenters requested the elimination of the requirement for cancellation by steering wheel rotation.

Since the operation of vehicles less than 80 inches in overall width is similar to that of passenger vehicles and other vehicles of lesser width are operated by drivers other than pro-

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Individual copies of Motor Vehicle Safety Standards may be obtained from the National Highway Safety Bureau's General Services Division, Room 5111C, Nassif Building, 400 Seventh Street SW., Washington, D.C. 20590.

professionals, their exclusion from this requirement is not warranted.

The Bureau is studying automatic cancellation by time or distance, or both, but current evidence indicates that these methods, given the state of the art, are inferior to cancellation by steering wheel rotation.

(e) As proposed, amber has been eliminated as an optional color of the stop lamp.

(f) The minimum candlepower of any separately mounted stoplamp will equal that of a Class A turn signal lamp.

Many commenters requested a longer leadtime to comply. The requests have been found reasonable, and good cause has been shown for an effective date of January 1, 1973. Other comments suggested consideration of stop lamp candlepower in connection with dual intensity signals, allowance for multiple compartment lamps, and retention of the present Class B intensity for motorcycle stop lamps.

Dual intensity signals have not been proposed, and since time is required for development and implementation of such a proposal, a requirement for increased minimum candlepower in stop lamps cannot be deferred. No justification has been found for not requiring Class A intensity for motorcycle stop lamps. The standard is therefore being amended as proposed, with clarifying provisions for multiple compartment stop lamps.

(g) It was proposed that motorcycles should be equipped with turn-signal lamps, that there be a maximum candlepower limitation on amber rear-mounted lamps, and that minimum photometric output of head and tail lamps at engine idle speeds should be specified.

Several comments objected to the maximum candlepower proposal and the mounting requirements specified in the proposed Table IV. Also, comments indicated potential problems if minimum photometric output were specified, suggesting instead reference to SAE Recommended Practice J392, "Motorcycle and Motor Driven Cycle Electrical System Maintenance of Design Voltage", December 1969.

Glare candlepower tests on signal lamps installed on the rear of motor vehicles have consistently indicated that a specification in excess of 300 candlepower for both red and amber

lamps is not desirable. A manufacturer encountering problems of exceeding this maximum with amber lamps has the option of using red lamps, which have a lower minimum required candlepower.

The detection and interpretation of turn signal lamps improves as they are mounted farther away from the centerline of the vehicle and from other lamps. Some motorcycle manufacturers, recognizing this fact, have installed the turn signal lamps in the ends of the handlebars, exceeding the requirements adopted in the amendment. The mounting requirements for these lamps specified in Table IV are considered reasonable and practicable for motorcycles.

The standard is being amended as proposed, except that minimum photometric output of headlamps and taillamps at engine idle speeds is not specified. Minimum photometrics are currently being studied for further rulemaking. Since an incorporation by reference to SAE Recommended Practice J392 was not proposed, it is beyond the scope of this rulemaking to incorporate it in the amendment.

(h) Aging and weathering requirements for plastic materials used for optical parts are specified. Although the comments generally supported this revision, many requested a more realistic test than continuous operation of stop and backup lamps in an oven for 1 hour to determine lens warpage. Accordingly, the amendment requires a cycle of operation of 10 minutes' duration followed by 10 minutes' rest during the 1 hour test. Comments suggesting extending the 2-year outdoor exposure test to 3 years and additional oven test details were beyond the scope of the proposal, and will be considered in future rulemaking actions.

(i) As proposed, the words "it is recommended that," "recommendations," or "should be" appearing in any referenced and subreferenced SAE standard shall be read as setting forth mandatory requirements, with minor exceptions covering certain aspects of school bus warning lamps.

(j) Specific tolerances for mounting lamps and reflectors "as far apart as practicable" were proposed, but have not been adopted.

Several comments recommended adopting the ISO (International Standards Organization) requirements that lamps and reflectors be mounted within 16 inches of the edge of the vehicle. Others stated that the Bureau did not have the authority to establish tolerances.

Vehicles having lamps located in conformance with ISO regulations may create problems of distance judgment resulting in driver error. Lamps could be mounted in a range from a minimum of 25 inches apart on small imported passenger cars to a maximum of 74 inches apart on standard domestic cars.

The location of lamps and reflectors is clearly safety related, as it facilitates clearance and distance estimation, detection of signals, and similar functions. The Bureau therefore has the authority to establish horizontal mounting tolerances, analogous to the vertical tolerances that have already been established.

Major changes in lighting requirements may result in the rulemaking action proceeding under Docket No. 69-19. New requirements such as horizontal mounting tolerances need relatively long leadtimes. Accordingly, this proposal has not been adopted, and the requirement for lamps and reflectors is still that they be located "as far apart as practicable."

(k) Lamps and reflectors must meet specified visibility angles when mounted on the vehicle.

Some comments pointed out that when special equipment such as mirrors and snow plows is mounted on the vehicle visibility and photometric test angles may not be met. The amendment allows compliance with this requirement by means of auxiliary lighting devices.

Items (l) through (o) represents proposals which were adopted:

(l) The axis of side reflex reflectors for the photometric test has been defined.

(m) The minimum mounting height for reflectors mounted on the rear of truck tractor cabs will be 4 inches above the height of the rear tires.

(n) Combination turn signal and hazard warning signal flashers will meet the requirements applicable to each, when tested in sequence. Manufacturers of turn signal and hazard warning signal flashers have commented that economic factors and the current state of the art in manu-

facturing lamps preclude a quality level that would totally eliminate occasional random failures. This condition is reflected in the language in Standard No. 108 that lighting equipment "shall be designed to conform" to the stated requirements. The SAE recognizes the problem by specifying an allowable percentage of failures in SAE Standards J590b, "Automotive Turn signal Flasher," and J945, "Vehicular Hazard Warning Signal Flasher." Such a provision is inappropriate, however, for regulatory purposes. It is doubtful that specific failure allowance in a standard would correspond with the statutory mandate that "No person shall manufacture for sale \* \* \* any motor vehicle or item of motor vehicle equipment \* \* \* unless it is in conformity with [any applicable] standard". (15 U.S.C. 1397(a)(1)). From a practical standpoint, such a provision would tend to make the requirement unenforceable except in extreme cases, since failures within a single lot are statistically inconclusive in determining the extent of failures in overall production. Therefore the sampling provisions of the two SAE Standards, originally incorporated by reference in Standard No. 108, are expressly omitted from the standard in this issuance. The omission should not cause a hardship, since the "designed to conform" language has been retained.

(o) SAE Recommended Practice J565b, "Semi-Automatic Headlamp Beam Switching Devices", has replaced J565a as the basic reference for this item of lighting equipment.

(p) It was proposed that all vehicles be equipped with a turn signal pilot indicator, and that those vehicles not equipped to tow trailers (i.e. vehicles with a fixed load flasher) be provided with a lamp failure indicator.

If visible to the rider, motorcycle front turn signal lamps can serve as the pilot indicator, as permitted in SAE Standard J588d, "Turn Signal Lamps".

Many comments objected to the proposal for a lamp failure indicator on vehicles 80 inches or more in overall width. Heavy-duty flashers used on these vehicles are not presently available with a failure indicator. However, this type flasher is considerably more durable than the fixed-load type, used on vehicles of lesser width, which in-

dicates a lamp failure, and the continued use of present heavy-duty flashers for wider vehicles is warranted. Also, vehicles of 80 inches or more overall width are generally used commercially, and many of them are subject to the regulations of the Bureau of Motor Carrier Safety of the Federal Highway Administration; such vehicles are more frequently inspected and failed lamps more promptly repaired. For the foregoing reasons, vehicles of 80 or more inches overall width are excluded from the requirement in the amended standard for a turn signal lamp failure indicator.

(q) As proposed, on vehicles less than 80 inches in overall width, license plate lamps and side marker lamps must be on when the headlamps are on, and the taillamps, license plate lamps, and side marker lamps when the parking lamps are on.

(r) No lamps that are normally steady-burning will be allowed to flash automatically for signaling purposes, except headlamps and side marker lamps.

Some commenters requested that additional lamps be permitted to flash, and some requested that flashing headlamps be prohibited.

With the exception of certain signals such as turn signals, hazard warning, and schoolbus warning signals, flashing lamps should be reserved for emergency and road-maintenance-type vehicles. Flashing lamps are otherwise prohibited in the Uniform Vehicle Code. Any lamp may be flashed by the vehicle driver by merely turning the standard lamp switch on and off, and this standard cannot prohibit such operation. However, the definition of "flash" adopted in the amendment makes clear that automatic flashers for use with steady burning lamps other than headlamps and side marker lamps are prohibited.

(s) SAE Standard J593c, "Backup Lamps", has replaced J592b as the basic reference for these lamps. The clarification is made that the center of the backup lamp lens is the optical center. However, because of the leadtime that will be required for manufacturers to alter their designs, good cause is considered shown for an effective date of January 1, 1973.

(t) Headlamp mountings will be required to meet SAE Recommended Practice J566, "Head-

amp Mountings". Although some comments suggested that this was a redundant requirement, it has been determined that this set of requirements contains important safety elements such as requiring lateral adjustability of motorcycle headlamps, adjustability of all headlamps by one man with ordinary tools, and that the aim will not be disturbed under ordinary conditions of service, matters that are not dealt with elsewhere in Standard No. 108.

(u) Turn signal operating units must be capable of meeting a durability test of 100,000 cycles. Most of the comments stated that the 175,000-cycle durability test proposed for passenger cars would be difficult to meet and recommended that SAE Standard J589a be referenced instead of J589. Since J589a includes other changes that were not proposed (temperature test, durability test cycle rate, and ambient temperature), it is beyond the scope of this rule-making to incorporate it by reference in the amended standard. However, a 100,000-cycle durability test has been adopted, as specified in J589a.

(v) The mounting requirements for clearance lamps have been amended to indicate that delineating overall vehicle width, rather than vehicle height, is the primary purpose of these lamps, and a clarification has been added that clearance lamps on truck tractors may be mounted so as to indicate the width of the cab.

(w) Identification lamps must be mounted as high as practicable, and the maximum permissible spacing between the lamps has been reduced from 12 inches to 8 inches.

Objections to these requirements were received primarily because the reduced spacing would create mounting problems due to interference with functional hardware, such as air conditioners and door locking mechanisms. The 8-inch maximum spacing has been adopted, but spacing 6 to 12 inches apart is allowed when 8-inch maximum spacing is not practicable.

(x) License plate lamps must illuminate the plate from the top or sides only.

This is a standard practice with domestic vehicle manufacturers, but not with foreign ones. Foreign manufacturers objected because of inadequate leadtime, and the proposal has been

adopted with an effective date of January 1, 1973.

(y) A maximum mounting height of 72 inches is specified for turn signal lamps.

Objections were received from manufacturers of cab-over-engine trucks and of snow removal equipment who commented that such a requirement would restrict turn signal placement. However, since no exceptions are specified for headlamp mounting (24-54 inches), none are considered necessary for turn signal lamps (15-72 inches) for these vehicles.

Other comments suggested revisions to the standard that went beyond the scope of the proposal. Those that appear to have merit will be considered in future rulemaking actions.

In consideration of the foregoing, 49 CFR 571.21, Federal Motor Vehicle Safety Standard No. 108, Lamps, Reflective Devices, and Associated Equipment, is amended to read as set forth below.

Effective date: July 1, 1971, except as otherwise noted in the text of the rule.

Issued on October 22, 1970.

Douglas W. Toms,  
Director,  
National Highway Safety Bureau.

35 F.R. 16840  
October 31, 1970



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses, Trailers and Motorcycles

(Docket No. 69-18)

Motor Vehicle Safety Standard No. 108, establishing requirements for lamps, reflective devices, and associated equipment on motor vehicles was amended on October 31, 1970 (35 F.R. 16840). Thereafter, pursuant to 49 CFR 553.35 (35 F.R. 5119) petitions for reconsideration of the amendment were filed by Freightliner Corp., Ford Motor Co., Japan Automobile Manufacturers Association, Inc., Wagner Electric Corp., General Motors Corp., Chrysler Corp., Rohm and Haas Co., Motor Coach Industries, International Harvester Co., and Motorcycle Industry Council, Inc. The petitions of Harley-Davidson Motor Co., Inc., Kawasaki Motors Corp., White Motor Corp., Hackney Bros. Body Co., and a supplement to the Japan AMA petition were not timely filed, and have been treated as petitions for rulemaking pursuant to 49 CFR 553.31. However, some of the issues raised in these petitions are similar to those contained in timely filed petitions.

In response to information contained in several of the petitions the standard is being amended. The Administrator has declined to grant requested relief from other requirements of the standard.

1. *Effective date.* General Motors, Ford, and Chrysler have petitioned for an extension of the effective date, stating that compliance is impracticable for 1971 models which, as of July 1, 1971, have only a short production life before the end of the model run. The Bureau has determined therefore that an effective date later than 1 year from issuance of the original amendment is in the public interest. The effective date of the standard is extended to January 1, 1972.

2. *Paragraph S4.1.1.7.* This paragraph is being amended to clarify that its stop lamp requirement does not apply to passenger cars manufactured before January 1, 1973, and to correctly cite SAE Standard J588d, "Turn Signal Lamps," June 1966, as the standard incorporated by reference.

3. *Paragraph S4.1.1.14.* The amendment inadvertently omitted installation requirements for backup lamps. This paragraph is hereby amended to correct the omission, and to insure that current installation requirements remain in effect until January 1, 1973.

4. *Paragraph S4.1.1.16.* Japan AMA and Motorcycle Industry Council objected to the portion of this paragraph that would require motorcycles, as of January 1, 1973, to be equipped with turn-signal units designed to complete a durability test of 100,000 cycles. In order to allow time for further industry study and comment on this aspect of performance, the requirement is withdrawn from the standard. It is anticipated, however, that an increased durability test cycle for motorcycle turn-signals will be proposed in a future rulemaking action.

5. *Paragraph S4.1.2.* Ford, Chrysler, and Rohm and Haas petitioned for reduction of the heat test cycle of the warpage test from 10 to 5 minutes or, in the alternative for an extension of the effective date of this requirement. The Traffic Safety Administration has determined that the 10-minute cycle is appropriate because of the frequency of usage of stop and backup lamps. The petitions for reduction of the test cycle are therefore denied. However, because of the leadtime for development and tooling of new

lamps which may be required, good cause is considered shown for postponement of the effective date for this requirement until January 1, 1973.

6. *Paragraph S4.3.1.8 and Table II.* General Motors, Motor Coach Industries, and International Harvester objected to the reduction in the maximum allowable spacing of identification lamps (from 6 to 12 inches, to 6 to 8 inches), alleging that there is no safety justification for the requirement, and that compliance by July 1, 1971, is impracticable. It is recognized that other approaches to wide-vehicle identification, such as minimum spacing between identification and clearance lamps, have merit. These approaches are being considered and, as deemed appropriate, will be incorporated into future rulemaking proposals. Accordingly, the petitions are granted; Table II is amended to reinstate the 6 to 12 inch spacing, and S4.3.1.8 is deleted.

7. *Paragraph S4.4.2 and Tables I and III.* Wagner Electric petitioned for reconsideration of the omission of sampling provisions from SAE Standard J590b, "Turn-Signal Units," October 1965, and SAE Standard J945, "Vehicular Hazard Warning Unit," February 1966. Letters have also been received inquiring as to the number of flashers constituting a sample for test and the number of failures allowable for compliance. Standard No. 108 was amended without notice to omit sampling provisions in order to bring the standard into conformity with the National Traffic and Motor Vehicle Safety Act of 1966, which requires that all items conform to applicable standards. Therefore the safety standards should not specify sampling provisions or failure rates. It is the manufacturer's responsibility to institute a test program that is sufficient to legally constitute due care, on a continuing basis, to insure that all products manufactured after the effective date of a standard meet the applicable requirements. However, in response to the procedural objection that the change is important enough to merit notice and opportunity for comment, Wagner's petition is granted and paragraph S4.4.2 and Tables I and III are being amended to strike the language precluding sampling provisions. At the same time, this agency is publishing today a notice (Docket No. 69-18; Notice 3, 36 F.R. 1913) pro-

posing omission of sampling provisions as of January 1, 1972, the date when this omission would otherwise have been effective.

8. *Paragraph S4.5.6.* International Harvester asked that the exemption for lamp outage indication be extended to vehicles equipped with auxiliary lamps or wiring, since these vehicles, like vehicles equipped to tow trailers, use variable load flashers. However, fixed load flashers providing lamp outage indication are available on the market for the increased load of an auxiliary lamp. The manufacturer can provide the appropriate flasher with foreknowledge of the intended end configuration of the vehicle, and International Harvester's petition is therefore denied.

9. *Tables II and IV.* Freightliner, International Harvester, and White Motor requested that the maximum mounting height allowable for turn-signal units, 72 inches, be reconsidered. This agency believes that most turn-signal lamps are presently mounted at or below the height of 72 inches, and that no detriment to motor vehicle safety would occur if the maximum mounting height were increased to 83 inches to allow higher mounting of turn-signals on cab-over-engine trucks, snow removal equipment, and other vehicles where a lower height may be impracticable. Tables II and IV are being revised accordingly. In Table IV the word "rear" was inadvertently omitted in that position of Column 2 establishing location requirements for side reflex reflectors, and has been reinserted.

10. *Table III.* Motorcycle Industry Council recommended that SAE Standard J584a, "Motorcycle and Motor Driven Cycle Headlamps," October 1969, be incorporated by reference rather than SAE Standard J584, April 1964. Such an amendment is beyond the scope of the original rulemaking proposal. Reference of the upgraded SAE Standard is being considered for a future rulemaking action. The petition is denied.

In addition, General Motors, Japan AMA, Motorcycle Industry Council, Harley-Davidson, and Kawasaki objected that the 300 candlepower limitation on motorcycle amber rear turn signals is unduly restrictive. Motorcycle Industry Council, Harley-Davidson, and Kawasaki objected to the spacing requirements for motorcycle

turn-signal lamps. Both of these matters are still under reconsideration and will be disposed of at a later date.

In consideration of the foregoing, S4.1.1.7, S4.1.1.14, S4.1.1.16, S4.1.2, S4.3.1.8, S4.4.2, Table I, Table II, Table III and Table IV of Motor Vehicle Safety Standard No. 108 in 49 CFR 571.21 are revised. . . .

Effective date: January 1, 1972, except as otherwise noted in the text of the rule.

Issued on January 28, 1971.

Charles H. Hartman,  
Acting Administrator, National Highway Traffic Safety Administration.

**36 F.R. 1896**  
**February 3, 1971**



## **PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108**

### **Lamps, Reflective Devices, and Associated Equipment—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses, Trailers and Motorcycles (Docket No. 69-18)**

This notice amends Motor Vehicle Safety Standard No. 108 to delete the 300-candlepower limitation on motorcycle amber rear turn signals, to adopt an interlamp spacing of 9 inches for motorcycle rear turn signal lamps, and to extend to January 1, 1973, the effective date by which passenger cars and vehicles less than 80 inches in overall width must be manufactured with self-canceling turn-signal units.

In response to petitions for reconsideration of Motor Vehicle Safety Standard No. 108 (35 F.R. 16840), certain amendments to the standard were published on February 3, 1971 (36 F.R. 1896). Action was deferred on other petitions pending further reconsideration. The National Highway Traffic Safety Administration has concluded its review of these petitions and is further amending Standard No. 108. General Motors, Japan Automobile Manufacturers Association, Inc., and Kawasaki Motors Corp. objected that the 300-candlepower limitation on motorcycle amber rear turn signals is unduly restrictive. Since the candlepower limitation would not have become effective until January 1, 1973, and since the Administration has not proposed similar restrictions on amber rear turn signals for other motor vehicles, these petitions are granted, and S4.1.1.11 is deleted. The NHTSA will address the overall problem of candlepower limitations, along with that of rear turn signal color, in a proposal currently under formulation.

Motorcycle Industry Council, Harley-Davidson, and Kawasaki objected to the spacing requirements for motorcycle turn signal lamps and requested that the spacing recommended by the SAE, 9 inches front and rear, be adopted instead. The Administration has decided to grant

the petitions insofar as they concern spacing of rear turn signals. Petitioners are concerned about the durability and injury potential of turn signal lamps spaced 12 inches apart at the rear of a motorcycle. While it appears true that wider spacing of turn signals at the rear create a greater likelihood of damage to the units should the motorcycle fall, this is not considered significant justification for spacing less than 12 inches. Rather, the crash injury problem appears of greater importance. While spacing of rear turn signal lamps at 12 inches does not appear to present a significant injury threat to pedestrians, it may present a hazard to operators and passengers when the vehicle is involved in a collision or falls over. This agency intends to evaluate motorcycle rear turn signal lamp spacing for injury potential in its motorcycle crash injury research program for the current fiscal year, and to reinstate the 12-inch requirement if such spacing does not appear to present a significant potential hazard. Table IV is hereby amended to specify 9 inches as the minimum horizontal separation distance for motorcycle turn signal lamps at the rear.

The motorcycle industry has also expressed its concern about the durability and injury potential of front turn signal lamps spaced 16 inches apart, as well as whether the spacing is justified by available data. Tests conducted by the Road Research Laboratory and SAE provide adequate support, not only for the 16-inch spacing at the front but also for the 12-inch spacing at the rear. Since front turn signal lamps are generally protected by handlebars and durability and injury potential do not appear to be significant, the Administration has decided to retain the 16-

inch spacing for motorcycle front turn signal lamps.

In addition, Citroen has brought to the attention of the Administration the fact that its vehicles exported to the United States are not equipped with, and are not currently designed to be equipped with, self-canceling turn signals. Because of the modifications required in the panel control, dashboard, and steering column, it avers that it cannot comply until January 1, 1973, and has petitioned that the effective date of S4.1.1.5 be extended. Since virtually all other motor vehicle manufacturers presently comply with this requirement, the granting of this petition would not cause a significant degradation of motor vehicle safety, and S4.1.1.5 is amended accordingly.

Finally, the word "red" inadvertently was included in the first sentence of S4.1.1.7 and is hereby deleted.

In consideration of the foregoing, § 571.21 is amended as follows:

1. S4.1.1.5 is amended to read:

S4.1.1.5 The turn signal operating unit on each passenger car, and multipurpose passenger

vehicle, truck, and bus less than 80 inches in overall width manufactured on or after January 1, 1973, shall be self-canceling by steering wheel rotation and capable of cancellation by a manually operated control.

2. In S4.1.1.7 the word "red" appearing between "Class A" and "turn signal lamps" is deleted.

3. S4.1.1.11 is deleted, in S4.1.1 the reference to "S4.1.1.16" is changed to "S4.1.1.15," and S4.1.1.12, S4.1.1.13, S4.1.1.14, S4.1.1.15, and S4.1.1.16 are renumbered S4.1.1.11, S4.1.1.12, S4.1.1.13, S4.1.1.14, and S4.1.1.15 respectively.

4. In Table IV, under Motorcycles Column 3 for turn signal lamps, the dimension "2 inches" for turn signals at or near the rear is changed to "9 inches."

Effective date: January 1, 1972.

Issued on May 13, 1971.

Douglas W. Toms,  
Acting Administrator.

36 F.R. 9069  
May 19, 1971

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108**  
**Lamps, Reflective Devices, and Associated Equipment—Passenger Cars, Multipurpose**  
**Passenger Vehicles, Trucks, Buses, Trailers and Motorcycles**  
**(Docket No. 69-18)**

The purpose of this notice is to amend Motor Vehicle Safety Standard No. 108 to delete sampling and failure-rate provisions from the tests of turn signal and hazard warning signal flashers, and to modify performance requirements for these items of motor vehicle equipment.

The notice of proposed rulemaking upon which this amendment is based was published in the *Federal Register* on February 3, 1971 (36 F.R. 1913). Standard No. 108 incorporates by reference SAE Standard J590b, "Automotive Turn Signal Flasher," October 1965, and SAE Recommended Practice J945, "Vehicular Hazard Warning Signal Flasher," February 1966. Both standards specify a test sample size and a permissible failure rate for the items tested, viz., that 50 items shall be "submitted for test," that 20 items shall be chosen from the 50, and that "at least 17 out of 20 samples" shall meet the requirements. These are the provisions whose deletion was proposed.

Careful consideration has been given to the comments received in response to the notice. Many industry comments opposed the proposal, alleging that substantially total compliance would necessitate an increase in unit cost, and arguing that the cost increase is not justified by the safety benefits to be gained. Concern was also expressed as to possible penalties that might arise from the occasional failures that are claimed by the industry to be unavoidable in items of this type.

As stated in the February 3 notice of proposed rulemaking, the NHTSA considers permissible failure rates to be contrary to both the letter and the intent of the National Traffic and Motor Vehicle Safety Act. Manufacturers are required

to use due care to ensure that all their products meet the requirements of the standards. The assessment of penalties for test failures is not automatic, however, but is made after a review of all the facts, with a view to determining whether due care was used in accordance with sound engineering and manufacturing principles. The sampling and failure-rate provisions are accordingly hereby deleted from the requirements in Standard No. 108 for turn signal and hazard warning signal flashers.

The NHTSA has determined that the design and production problems associated with the manufacture of thermal flashers are such that total compliance with current performance and durability test requirements is not practicable. Therefore, modifications have been made in starting time, voltage drop, flash rate and percent current "on" time for performance tests, and in the duration and cycle of operation for durability tests. For example, the previously required performance range of 60 to 120 flashes per minute is broadened to 40 to 140 flashes per minute, and the percentage of time during a flash cycle that flasher contacts are required to be engaged, previously a range of 30 percent to 75 percent, is now 25 percent to 80 percent. The durability test for turn signal flashers will be continuous for 25 hours, rather than consisting of an on-off cycle for 200 hours. The durability test for hazard warning signal flashers is reduced to 12 hours from 36 hours. This agency has concluded that the net effect of these modifications is not a lessening of motor vehicle safety, since the minimum performance of flashers is substantially upgraded by requiring compliance of every flasher manufactured, rather than of only 17 of every 20 tested.

To implement the deletion of sampling and failure-rate provisions and the modification of the previous requirements, the NHTSA is amending Standard No. 108 to delete existing references to SAE Standard J590b and SAE Recommended Practice J945, and to adopt a new paragraph S4.6, *Turn signal flashers; hazard warning signal flashers*, that incorporates the new requirements.

In consideration of the foregoing, 49 CFR 571.21, Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices and Associated Equipment*, is amended. . . .

*Effective date:* January 1, 1973. Manufacturers commented that the proposed effective date

of January 1, 1972, was impracticable in view of the necessity to evaluate and adopt new flasher and switch designs meeting the requirements. In light of the time needed for changes in design and preparation for production, the Administrator has found, for good cause shown, that an effective date later than one year from the date of issuance is in the public interest.

Issued on August 20, 1971.

Charles H. Hartman  
Acting Administrator

**36 F.R. 17343**  
**August 28, 1971**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108****Lamps, Reflective Devices and Associated Equipment**

(Docket No. 69-18; Notice 6)

Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices, and Associated Equipment*, was amended on August 28, 1971 (36 F.R. 17343) to revise performance requirements for turn signal and hazard warning signal flashers. Thereafter petitions for reconsideration of the amendment were filed by Chrysler Corporation, Ideal Corporation, Signal-Stat Corporation, and Stewart-Warner Corporation. This notice responds to these petitions. This notice also amends Standard No. 108 to allow compliance with paragraph S4.6 of Standard No. 108a (§ 571.108a), at the option of the manufacturer, before January 1, 1973.

In its petition for reconsideration, Chrysler noted that "the amendment deletes the sampling provision and imposes new, presumably less stringent, but unique performance requirements" and commented that "while this change was announced in principle in prior rulemaking actions, the details of the new performance requirements were specified for the first time in this amendment." Claiming that its suppliers have not had time to evaluate their ability to comply with the new requirements, Chrysler petitioned that the amendment be withdrawn and reissued as a notice of proposed rulemaking. Sampling and failure-rate provisions were initially deleted in a rule published October 31, 1970 (35 F.R. 16840), which amended Standard No. 108 in various ways. Then, in response to objections that the action had not been previously the subject of a notice of proposed rulemaking, the action was revoked, a new notice of proposed rulemaking to that effect was issued on February 3, 1971 (36 F.R. 1913), and all interested persons were given full opportunity to comment. After careful consideration of the comments received, the agency again published a rule on August 28,

1971 (36 F.R. 17343), which deleted the sampling and failure-rate provisions. The rule also relaxed somewhat some of the quantitative levels of required performance. Thereafter, in accordance with the agency procedural rules, petitions for reconsideration of the rule were received and considered. The NHTSA considers that these actions have considerably exceeded the requirements of the Administrative Procedure Act, 5 U.S.C. 553, that notice and opportunity for comment be provided giving "either the terms or substance of the proposed rule or a description of the subjects and issues involved," and finds that no significant further benefit will be gained by reopening the matter for still another round of comments. Chrysler's petition is therefore denied.

Stewart-Warner submitted a general petition for reconsideration of the amendment, believing that "the amendment can allow unsafe conditions to come into existence." While it is true that the new performance requirements, on a strictly quantitative basis, may be viewed as less stringent than the old, the agency has concluded that the net effect of the amendment, considering the removal of the permissible failure rate, is not a lessening of the safety performance of these items.

Signal-Stat and Ideal petitioned that paragraph S4.1.1 be amended to require that all lighting equipment designed to conform to Standard No. 108 be "manufactured in accordance with sound engineering, manufacturing, and quality control principles." The basis for this request, in Signal-Stat's words, is that "while it is not possible to assure the durability of any single individual flasher, it is possible to reasonably produce requirements on a statistical basis in mass production," and that "the only

feasible and practical 'due care' and production means available, dictated by sound quality control principles, is to evaluate devices of volume on a statistical basis." The NHTSA has generally no objection to the above statements, although they are not necessary or appropriate for inclusion in the standard itself. The agency does not have any intent of outlawing designs such as thermal flashers, that have been previously used to satisfy the requirements in question. It also recognizes fully that with high-volume, low-cost items of equipment such as flashers, sample testing by the manufacturer may be the only practicable means of quality control. It can further be stated that in the case of such items, an occasional failure of NHTSA compliance tests, representing a very small percentage of production, will not necessarily result in a determination that there has been a violation of the Act. The question in each case is whether the manufacturer exercised due care; wherever a manufacturer can establish that he has exercised due care, he will not be in violation of the Act. The petitions of Ideal and Signal-Stat are therefore denied.

Ideal has also requested an interpretation that it be allowed to manufacture flashers before January 1, 1973, that conform to the revised requirements. To encourage manufacturers to conform at an early date, the NHTSA is amending Standard No. 108 to allow compliance with

paragraph S4.6 of Standard No. 108a (§ 571.108a), at the option of the manufacturer, between January 1, 1972, and January 1, 1973.

This notice also corrects a paragraph numbering error in both standards.

In consideration of the foregoing, 49 CFR § 571.108, Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices, and Associated Equipment*, is amended. . . .

*Effective date:* January 1, 1972. Because the amendments create no additional burden or obligation, and permit an early implementation of revised performance requirements, the Administrator has found for good cause shown that an effective date earlier than one hundred eighty days after issuance of this notice is in the public interest.

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on December 22, 1971.

Douglas W. Toms  
Administrator

**36 F.R. 25013**  
**December 28, 1971**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 69-18; Notice 7)

The purpose of this notice is to specify a permissible method of certifying replacement lighting equipment for vehicles manufactured on or after January 1, 1972, to conform to Federal Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices, and Associated Equipment*.

Section 114 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1403) requires every manufacturer or distributor of motor vehicle equipment to "furnish to the distributor or dealer at the time of delivery of such . . . equipment by such manufacturer or distributor the certification that each such . . . item of motor vehicle equipment conforms to all applicable Federal motor vehicle safety standards . . . [S]uch certification may be in the form of a label or tag on such item or on the outside of a container in which such item is delivered." Thus, manufacturers of equipment to which a safety standard applies generally certify the equipment by labeling either the equipment or its container. In the case of Standard No. 109, *New Pneumatic Tires*, certification labeling on the items themselves is required by the standard.

Normally, the certification responsibility of a distributor is met by the distributor's delivery of the manufacturer's certification statement to the dealers to whom he sells. Although no separate statement is necessary, the delivery of the manufacturer's certification is considered a legal act by which the distributor makes the certification required by the statute.

With the extension of Standard No. 108 to items of replacement equipment, some difficulties in this scheme may arise where small items are not individually packaged. Automotive parts distributors commonly sell single items of equipment "over the counter" to local garagemen, who are dealers within the meaning of the Act. If these items are not separately packaged and not

marked with a certification, the distributor must, under the Act, certify the items to the dealer. Although there is a variety of ways in which the distributor can do this, it is probably unrealistic to expect a separate certification to be properly and consistently made at this level. Manufacturers of lighting equipment have recognized the problem, and have suggested that they be permitted to certify their equipment by affixing the symbol DOT to each item of equipment.

This request has been found to have merit, and S4.7 of Standard No. 108, 49 CFR 571.108, is hereby amended to permit manufacturers to certify lighting equipment items by placing the symbol "DOT" directly on the item, if they choose to do so.

In consideration of the foregoing, S4.7 of 49 CFR § 571.108, Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices, and Associated Equipment*, is amended. . . .

*Effective date:* January 12, 1972. Because the amendment creates no additional burden or obligation and permits an optional method of compliance with an existing requirement, the Administrator has found for good cause shown that an immediate effective date is in the public interest.

This notice is issued under the authority of sections 103, 112, 114 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1401, 1407) and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on January 6, 1972.

Douglas W. Toms  
Administrator

37 F.R. 445  
January 12, 1972



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108****Lamps, Reflective Devices, and Associated Equipment**

(Docket No. 69-18; Notice 8)

This notice amends 49 CFR 571.108 and 571.108a, Motor Vehicle Safety Standard No. 108 and No. 108a, *Lamps, Reflective Devices, and Associated Equipment*, to permit off-center spacing of identification lamps on vehicles 80 inches or more in overall width.

Utility Trailer Manufacturing Co., has petitioned for the reinstatement of former requirements for the location of identification lamps. Before January 1, 1972, the three-lamp cluster was required to be mounted "as close as practicable to the vertical centerline." On vehicles manufactured on or after that date, the three identification lamps must be mounted "one on the vertical centerline, and one on each side of the vertical centerline." A type of trailer manufactured by Utility mounts a lock on the centerline of the trailer with the lock socket at the rear header. Typically the header is shallow and does not allow room to mount the gasket seal, the center lock socket, and an identification lamp all "on the vertical centerline." Extensive retooling is necessary for compliance, and apparently would cause hardship to Utility and other manufacturers of this type of trailer. The Administration believes that permitting the lamp cluster to be mounted slightly off center would not com-

promise motor vehicle safety, and accordingly is returning to the original mounting requirement for all vehicles required to have identification lamps.

In consideration of the foregoing, the specifications for "Identification Lamps" in Table II, Location of Required Equipment, 49 CFR § 571.108, and 49 CFR § 571.108a, are revised. . . .

*Effective date:* January 25, 1972. Because the amendments create no additional burden or obligation, the Administrator finds for good cause shown that an immediate effective date is in the public interest.

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on January 19, 1972.

Douglas W. Toms  
Administrator

37 F.R. 1107  
January 25, 1972



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 72-4; Notice 2)

This notice amends 49 CFR § 571.108 and § 571.108a, Motor Vehicle Safety Standard Nos. 108 and 108a, *Lamps, Reflective Devices, and Associated Equipment*, to revise the test method for reflex reflectors.

On April 8, 1972, the National Highway Traffic Safety Administration proposed (37 F.R. 7107) that the applicable SAE standard for reflex reflectors incorporated by reference in Table I and Table III of Standards No. 108 and 108a be SAE Standard J594e, "Reflex Reflectors," March 1970, to replace J594d, March 1967. All comments received were in favor of the proposal and the standards are being amended accordingly. The effect of the amendment is to permit photometric testing at a range around a test point if specular reflection is encountered at the test point itself. The amendment does not impose a new performance requirement but allows a more realistic method of testing than J594d, which prohibited testing at other than the specified test points, and which had the effect of causing a technical noncompliance if there were specular reflection at any test point.

Paragraph S4.3.1.2 has been incorporated into J594e and is being deleted from the text of Standard No. 108a. This paragraph specifies that, for purposes of photometric testing, the

axis of the side reflex reflectors shall be perpendicular to a vertical plane through the longitudinal axis of the vehicle.

In consideration of the foregoing, 49 CFR § 571.108 and § 571.108a, Motor Vehicle Safety Standards 108 and 108a, are revised . . . .

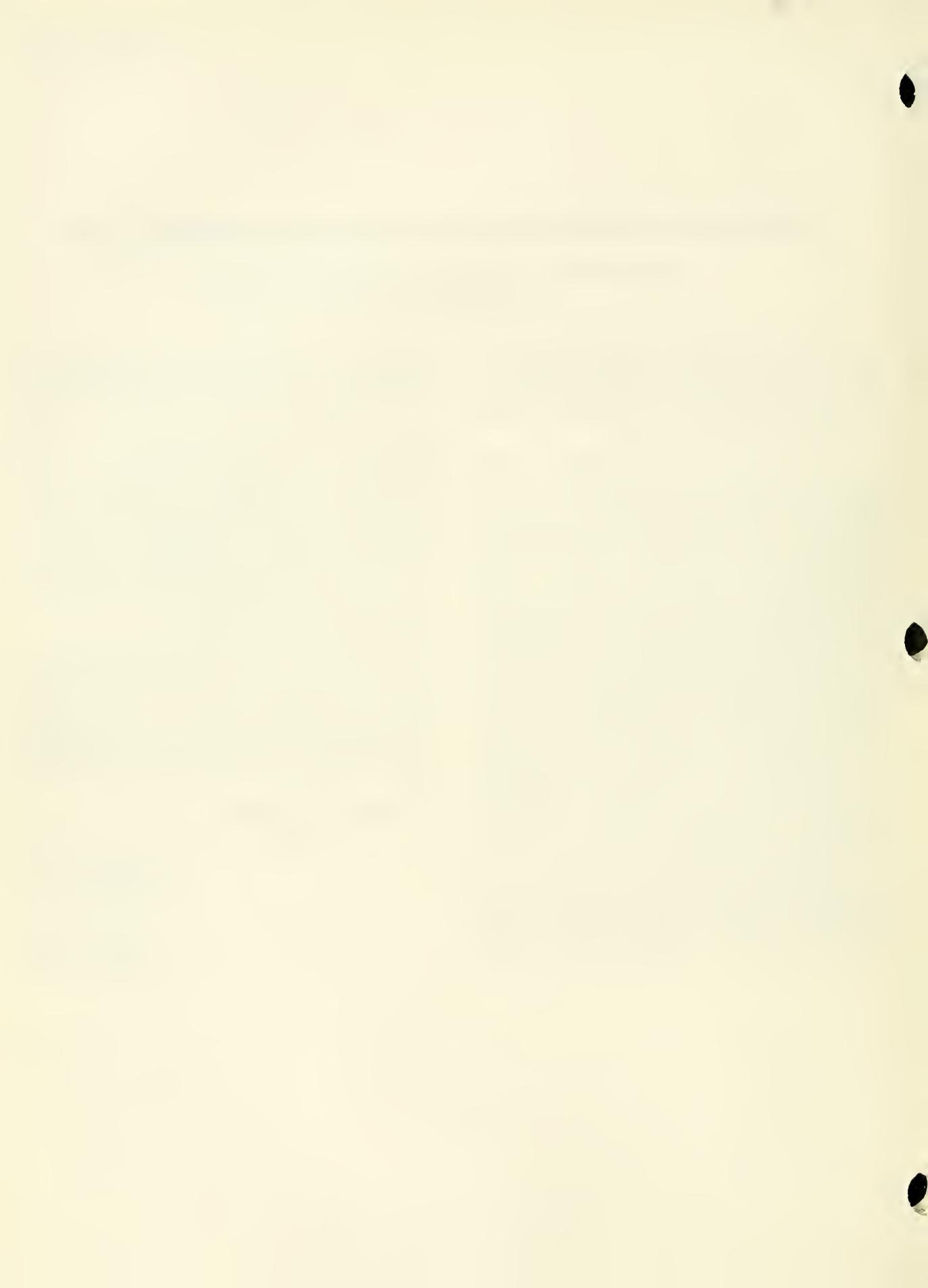
*Effective date:* Standard No. 108: Sep. 1, 1972; Standard No. 108a: January 1, 1973. Because the amendments create no additional burden and modify a test procedure currently in effect, it is found for good cause shown that an effective date earlier than one hundred eighty days after issuance is in the public interest.

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on July 28, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 15514**  
**August 3, 1972**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 69-18; Notice 11)

This notice amends 49 CFR Part 571, by revoking Section 571.108a, Motor Vehicle Safety Standard No. 108a, *Lamps, Reflective Devices, and Associated Equipment* and deleting a conforming amendment to Standard No. 108, in accordance with a decision of the U.S. Court of Appeals.

Standard No. 108a was established on December 2, 1971 (36 F.R. 22909), to clarify requirements for turn signal and hazard warning signal flashers effective January 1, 1973. These requirements were established by an amendment published on August 28, 1971 (36 F.R. 13743). The amendment deleted sampling and failure rate provisions from the tests for these items of motor vehicle equipment, and modified the performance requirements.

Pursuant to section 105(a)(1), of the National Traffic and Motor Vehicle Safety Act of 1966 (15 USC 1394(a)(1)), Wagner Electric Corporation petitioned for review of the August 28, 1971 order in the United States Court of Appeals for the Third Circuit. On August 29, 1972, the court granted the petition, set aside the order and remanded the matter to the National Highway Safety Administration for new rulemaking proceedings consistent with the court's views.

(Wagner Electric Corporation v. Volpe, No. 71-1976 (3d Cir. 1972))

By this notice, the NHTSA deletes from the Code of Federal Regulations the amendment set aside by the Court's order. The deleted provision essentially constituted the version of the standard that was to become effective January 1, 1973, (Standard No. 108a) along with paragraph S4.1.1.16 of Standard No. 108, which allowed manufacturers to conform to the new requirements before that date.

In consideration of the foregoing, 49 CFR Part 571 is amended . . . .

*Effective date:* This notice reflects the order of the U.S. Court of Appeals for the Third Circuit, whose mandate was issued September 19, 1972, and is effective as of that date.

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority at 49 CFR 1.51.

Issued on September 28, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 20695**  
**October 3, 1972**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 71-21; Notice 3)

This notice amends 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices, and Associated Equipment*, to modify the method by which conformity of certain lamps to photometric requirements is determined. A notice of proposed rulemaking on this subject was published on November 30, 1971 (36 F.R. 22763).

Standard No. 108 requires that tail lamps, stop lamps, parking lamps, and turn signal lamps meet minimum photometric candlepower requirements at up to 27 individual test points. If a lamp fails to meet the minimum requirement at any test point, the lamp does not conform to Standard No. 108 even though it may exceed the specified minimum at all other test points.

As noted in the November 30, 1971 proposal, this requirement appeared unnecessarily severe, since deviances at individual test points are generally not great enough to be discernible to the human eye. The method proposed and adopted sets up seven groups of test points, as shown in Figure 1, each group containing from three to five test points. The groups include requirements for devices with one, two, or three separately lighted compartments, and multiple lamps used in an array to perform a function at a single design location. The minimum candlepower requirement for any single group is the sum of the minimum candlepower specified in the applicable SAE standards for individual test points within the group. Therefore, there will be no failure to conform to Standard No. 108 as long as the sum of the candlepower measured at all test points within a group equals or exceeds the required minimum figure for that group. The amendment will not have a significant effect on motor vehicle safety and is designed to set up a

more realistic and cost effective method of determining compliance with photometric requirements.

Two aspects of the proposal are not adopted in the amendment. The proposal would have set a floor of 60 per cent on the amount by which the measured candlepower at a single test point could fail to reach the required minimum for that test point. The same rationale governing the overall proposal dictated that the floor not be adopted: as long as the sum of the test points within a group meets the overall minimum for the group, the difference in illumination at any discrete test point is unlikely to be great enough to be discernible.

Secondly, the proposal would have required that clearance, side marker, identification, and parking lamps have minimum candlepower equivalent to tail lamps. This proposal has not been adopted. Comments indicated that the increase in candlepower would be so significantly greater as to cause a glare problem. The group test concept has been adopted for parking lamps, but not for clearance, side marker, identification lamps, which retain minimum candlepower for all test points.

In addition, a deferred effective date has been adopted for increased grouped candlepower requirements applicable to tail, stop and turn signal lamps with two or three lighted compartments, and to lamp arrangements where two or three lamps are used to perform a single function in a single design location. These requirements have been made effective September 1, 1974, in order to provide sufficient leadtime for redesign and retooling. In the interim, beginning January 1, 1973, such lamps or lamp arrangements may meet the grouped requirements applicable to single

compartment and single stop and turn signal lamps.

It was also proposed that minimum candlepower requirements be specified for tail lamps, stop lamps and turn signal lamps, measured at a 45-degree angle where any SAE Standard incorporated by reference required visibility of the lamps at a 45-degree angle. Objections were raised that the proposed values were too high and that there was no safety benefit in requiring them. The NHTSA, on the basis of its analysis of cost benefit factors, has not adopted the proposal.

The amendment does not adopt the proposal that both red and yellow rear turn signal lamps have the same maximum candlepower limitation. The subject of the color of rear turn signal lamps will be addressed in a forthcoming notice, in Docket No. 69-19.

The SAE standard applicable to parking lamps in Table III has been changed to SAE Standard J222, "Parking Lamps (Position Lamps)," December 1970. Paragraph S4.1.1.11, which specifies photometric values for parking lamps, is

deleted as these values are incorporated in the revised SAE standard.

In consideration of the foregoing, 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, is revised . . . .

*Effective date:* January 1, 1973. Because the amendment creates no additional burden, it is found for good cause shown that an effective date earlier than one hundred eighty days after issuance is in the public interest.

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392 and 1407) and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on October 2, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 21328**  
**October 7, 1972**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 72-5; Notice 2)

This notice amends 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices, and Associated Equipment*, to specify stop and turn signal lens area requirements that are identical for all motor vehicles less than 80 inches in overall width.

As the NHTSA explained in its proposal published April 8, 1972 (37 F.R. 7107), Standard No. 108 requires (Table III) passenger cars, multipurpose passenger vehicles, trucks, and buses to be equipped with "Class A" turn signal lamps. Class A lamps prior to Standard No. 108 were generally found only on vehicles whose overall width is 80 inches or more. Class A lamps differ from Class B lamps in having a minimum effective projected illuminated area of 12 square inches rather than  $3\frac{1}{2}$  square inches. Paragraph S4.1.1.7 of Standard No. 108, however, permits passenger cars to meet Class A photometrics through an effective projected illuminated area not less than that of a Class B lamp ( $3\frac{1}{2}$  square inches). The NHTSA, in response to a petition from Jeep Corporation, proposed that this exception be provided for all vehicles less than 80 inches in overall width, instead of being limited to passenger cars, and that stop lamps be included as well.

The comments received supported the proposal. Recommendations were also made as to standardization of lens area and identification of lamps providing Class A photometric values. These will be treated as suggestions for future rulemaking since they were beyond the scope of the proposal.

In consideration of the foregoing, the first sentence of paragraph S4.1.1.7 of 49 CFR 571.108, Standard No. 108, is revised . . .

*Effective date:* January 1, 1973. Because the amendment relaxes a requirement and creates no additional burden, it is found for good cause shown that an effective date earlier than one hundred eighty days after issuance is in the public interest.

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407), and the delegation of authority at 49 CFR 1.51.

Issued on: October 26, 1972.

Charles H. Hartman  
Acting Administrator

**37 F.R. 23272**

**November 1, 1972**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 71-21; Notice 4)

This notice amends 49 CFR § 571.108, Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices, and Associated Equipment*, to specify minimum photometric-candlepower requirements for motorcycle turn signal lamps.

Standard No. 108 was amended on October 7, 1972 (37 F.R. 21328), effective January 1, 1973, to specify, in part, that turn signal lamps are not required to meet the minimum photometric values at each test point specified in Table 2 of SAE Standard J575d, "Tests for Motor Vehicle Lighting Devices and Components," if the sum of the candlepower measured at the test points within the groups listed in Figure 1 is not less than the sum of the candlepower values for such test points specified in J575d. Effective January 1, 1973, Class B turn signal lamps are required on motorcycles, and the minimum photometric candlepower values for such lamps are one-half those required for Class A turn signals. The amendment failed to make this distinction, and this notice corrects the omission.

In consideration of the foregoing, paragraph S4.1.1.12 of 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, is amended . . . .

*Effective date:* January 1, 1973. Because the amendment creates no additional burden, it is found for good cause shown that an effective date earlier than 180 days after issuance is in the public interest.

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on November 21, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 25235**  
**November 29, 1972**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices and Associated Equipment

(Docket No. 69-18; Notice 14)

This notice amends 49 CFR § 571.108, Motor Vehicle Safety Standard No. 108, to delete the requirements of the warpage tests for plastic lenses used on lamps.

The NHTSA proposed on July 7, 1972 (37 F.R. 13350), that the lens warpage test be deleted from the motor vehicle lighting standard. The test requirement itself, as contained in an SAE Standard incorporated by reference, lacked objectivity, in that it prohibited warpage that would "affect the proper functioning of the device" without further clarification. The lens warpage test did not appear to add significantly to motor vehicle safety.

Comments to the docket were divided, some confirming the NHTSA position on both issues. Others objected, suggesting that the agency seek to establish objective compliance criteria. On review of all data and arguments, the NHTSA finds that a safety problem that would justify the development of such a requirement has not been demonstrated.

In the future, if serious problems of lens warpage arise, they may be dealt with immediately

as safety-related defects under section 113 of the National Traffic and Motor Vehicle Safety Act, and steps can be taken to develop and promulgate an objective test.

In consideration of the foregoing, 49 CFR § 571.108 is amended . . . .

Effective date: Jan. 1, 1973. Because this amendment relieves a restriction and creates no additional burden, it is found for good cause shown that an effective date earlier than 180 days after issuance is in the public interest.

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority at 49 CFR 1.51.

Issued on December 29, 1972.

Jack L. Goldberg  
Acting Administrator

**38 F.R. 743**  
**January 4, 1973**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices and Associated Equipment

(Docket No. 71-21; Notice 6)

This notice denies petitions for reconsideration of an amendment to Federal Motor Vehicle Safety Standard No. 108 published on October 7, 1972, that modified the method by which conformity of certain lamps to photometric requirements is determined.

The National Highway Traffic Safety Administration amended 49 CFR § 571.108, Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices, and Associated Equipment*, on October 7, 1972, (37 F.R. 21328) to allow photometric conformance of parking lamps, taillamps, stop lamps, and turn signal lamps to be based upon the sum of values derived from grouping individual test points rather than upon a requirement of conformance at each test point. Thereafter, pursuant to 49 CFR § 553.35, petitions for reconsideration of the amendment were filed by American Motors Corporation, Ford Motor Company, General Motors Corporation, SWF-Spezial fabrik fur Autozubehor Gustav Rau GmbH, and Volkswagen of America, Inc. Petitions raising the same issues but not timely filed were submitted by Automobiles Peugeot on behalf of the Association Peugeot-Renault and Westfalische Metall Industry KG. Chrysler Corporation submitted a request for an interpretation. The Administration has declined to grant requested relief.

1. *Inclusion of SAE Recommended Practice J256.* All petitioners except General Motors asked for adoption in its entirety of SAE Recommended Practice J256, "Service Performance Requirements for Motor Vehicle Lighting Devices," July 1971. Petitioners complain that the NHTSA adopted the grouping concept and photometric values of Table I and Table 3 of the Practice without including a correction adjustment factor or a tolerance for maximum

photometric values. SAE J256 permits an adjustment in lamp orientation from design position not to exceed 3 degrees in determining compliance with photometric requirements. SAE J256 also permits a tolerance of 10 per cent in determining whether group photometric requirements are met. It further provides that the candlepower of parking lamps, taillamps, stop lamps, and turn lamps shall not exceed 120 per cent of the maximum values specified in appropriate SAE Standards. In support of their request petitioners argue that a readjustment factor is necessitated by the difficulties that test laboratories experience in insuring that lamps of complex and varied shapes are mounted with accuracy in the design position. Tolerances in candlepower output are requested because of variations in test lamp bulbs, and in manufacture and assembly of the lamps themselves.

When Standard No. 108 required compliance at every test point, the SAE Standards incorporated by reference did not permit the tolerances that petitioners request. Compliance by meeting minimum group totals rather than compliance at each test point is intended to insert a factor to compensate for those variations in test methods and manufacture that apparently concern industry. The tolerances in the SAE Recommended Practice represent a further lowering of the quantitative performance requirements. The NHTSA has determined that no sufficient reasons have been given to lower these requirements further, and that it is not in the interest of motor vehicle safety to do so. The petitions are denied.

2. *Excluded lamps.* General Motors requests the inclusion in the group testing concept of clearance lamps, side marker lamps, and identification lamps, as originally proposed by NHTSA.

GM's petition is denied. Under the proposal, photometric requirements for clearance, side marker, and identification lamps would have been increased, and identical to those for parking lamps and taillamps. But the proposed values were not adopted, and these lamps were not included in the group concept. The NHTSA believes that the group concept is inappropriate for lamps of low candlepower, and that requirements should be met at each test point. The photometric requirements for clearance, side marker, and identification lamps, are minimal in nature and identical at all test points.

3. *Interpretations.* Chrysler Corporation has asked whether "the maximum values provided in Figure 1 may be used in place of the maximum photometric values set out in paragraph S5.2," which states in pertinent part that "the maximum photometric candlepower values for one-compartment and two-compartment stop lamps shall be 300 candlepower." The answer is yes, and paragraph S5.2 is being deleted.

Chrysler has also asked whether "subscripts (f) and (g) of Table 2 of . . . SAE Standard J575d applies to the measurement of the maximum values in . . . Figure 1 . . .". There is no footnote (g) in J575d, and footnote (f) does apply.

Clarification has also been requested as to whether the maximum tail lamp values in Figure 1 are intended to apply at test points below the horizontal. The answer is no; the limitation, as was true before the amendment, is restricted to the horizontal and above.

In consideration of the foregoing, section S5 of 49 CFR § 571.108, Motor Vehicle Standard No. 108 is amended by removing the designation "S5.1" and deleting paragraph S5.2.

Effective date: February 5, 1973. Because the amendment clarifies an ambiguity and creates no additional burden, good cause has been shown that an effective date earlier than 180 days after issuance is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on January 30, 1973.

Douglas W. Toms  
Administrator

**38 F.R. 3331**  
**February 5, 1973**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices and Associated Equipment

(Docket No. 71-21; Notice 7)

This notice corrects the amendment to 49 CFR § 571.108 published on February 5, 1973 (38 F.R. 3331) that removed the designation "S5.1" and deleted paragraph S5.2 from Motor Vehicle Safety Standard No. 108.

The amendment inadvertently overlooked the fact that a new paragraph S5.3, concerning lens warpage, had been added to Standard No. 108 on January 4, 1973 (38 F.R. 743). The notice published on February 5, 1973 should have retained the designation of S5.1, deleted S5.2 and renumbered S5.3.

In consideration of the foregoing, section S5 of 49 CFR § 571.108, Motor Vehicle Safety Standard No. 108, is amended by adding the designation "S5.1" to the first paragraph, and

changing the designation of paragraph S5.3 to read "S5.2".

Effective date: February 28, 1973. Because the amendment corrects an error and creates no additional burden good cause has been shown that an effective date earlier than 180 days after issuance is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51).

Issued on February 21, 1973.

Douglas W. Toms  
Administrator

**38 F.R. 5338**  
**February 28, 1973**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 71-21; Notice 6)

This notice amends the test procedures relating to bulbs in Motor Vehicle Safety Standard No. 108, effective January 1, 1974.

The National Highway Traffic Safety Administration proposed on December 1, 1972 (37 F.R. 25535) to amend two test procedures relating to bulbs. As the NHTSA explained:

"At the present time, test bulbs must be 'operated at their rated mean spherical candlepower unless otherwise specified.' Not all bulbs have been assigned a mean spherical candlepower rating. The proposal specifies that when no rating has been assigned by the bulb manufacturer or the SAE or, if the lamp is sealed and the bulb cannot be replaced, the bulb shall be operated at design voltage. Secondly, instances have arisen where noncompliance of lamps could not be proven in marginal cases because of the tolerances permitted in test bulbs. The notice seeks to render test results more reproducible by proposing that the filaments of test bulbs (other than sealed-in bulbs) be positioned within  $\pm .010$  inch of the nominal design position specified in SAE Standard J573d, "Lamp Bulbs and Sealed Units," or by the bulb manufacturer. Other requirements of SAE Standard J575d, incorporated by reference into Standard No. 108, remain applicable."

Comments generally supported the notice, and the standard is being amended as proposed. The chief objection voiced was that it is difficult to obtain test bulbs at the proposed filament location tolerances. The NHTSA finds, however, that these difficulties are outweighed by the need for objective and repeatable tests. Moreover, while the NHTSA intends to use a bulb with the filament positioned within  $\pm .010$  inch of the de-

sign position for its compliance tests, a manufacturer is not required to do so. If the manufacturer has test data to show a correlation between a Standard No. 108 test bulb and one used by him outside the  $\pm .010$ -inch tolerances, his certification could be based on the test data and the correlation factor, assuming that that factor indicated compliance. Similarly if it can be demonstrated that the lamp complied using test bulbs having filament locations on both the plus and minus sides of the design position, outside the  $\pm .010$  tolerance but within the other tolerances of J573, compliance could be certified.

The NHTSA would also like to make clear that only the filament in the test bulb for the function tested need meet the .010-inch tolerance. For example, if a combination tail lamp/stop lamp is being tested for the tail lamp function, the stop lamp filament need not be within the tolerance, and a bulb with a correctly positioned filament may subsequently be substituted for the stop lamp test.

In consideration of the foregoing, 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, is revised by adopting new paragraphs S4.1.1.19 and S4.1.1.20. . . .

Effective date: January 1, 1974.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 38 F.R. 12147)

Issued on June 15, 1973.

James E. Wilson  
Associate Administrator  
Traffic Safety Programs

**38 F.R. 16230**  
**June 21, 1973**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 69-19; Notice 6)

This notice amends the requirements of Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices and Associated Equipment* applicable to trailers that are either less than 6 feet in overall length or 30 inches in overall width.

On October 25, 1972 the National Highway Safety Administration proposed (Docket No. 69-19; Notice 3, 37 F.R. 22801) as part of a comprehensive rule making action that small trailers need not be equipped with the complement of lighting devices required of larger trailers. The agency proposed that a trailer less than 30 inches wide may be equipped with only one of each of the following devices located at or near its vertical centerline: tail lamp, stop lamp, and rear reflex reflector. The NHTSA also proposed that a trailer that is less than 6 feet in overall length, including the trailer tongue, need not be equipped with front side marker lamps and front side reflex reflectors. In the opinion of the NHTSA this equipment is sufficient to meet the needs of motor vehicle safety. Commenters generally agreed, and Standard No. 108 is being amended as proposed. Two suggested that two rear reflectors be required. The amendment, which is phrased as an option, does not preclude a two-reflector configuration if the manufacturer wishes. In accordance with several comments, the amendments, which relieve a restriction, are being made effective 30 days after publication of this notice in the *Federal Register*.

Several amendments of Standard 108 are also being made by this notice to reflect the expiration of the stated period for certain compliance options. Paragraphs S4.1.1.13, S4.1.1.14, and S4.1.1.15 of Standard 108 deferred compliance with amended backup lamp and license plate lamp requirements, and with turn signal require-

ments for motorcycles, until January 1, 1973, at the manufacturer's option. Since these options are no longer permissible, the paragraphs are being deleted. Rather than redesignating the succeeding subparagraphs of S4.1.1 as has been the practice in the past, the NHTSA, in order to eliminate confusion, intends to maintain the current order and adopt new numbers in successive order for new requirements. A similar policy has been adopted with respect to footnotes in the Tables. Thus, the trailer lighting amendments adopted by this notice are designated S4.1.1.17 and S4.1.1.18. S4.1.1.16 is amended to delete the expired option allowing use of Class B turn signals on vehicles less than 80 inches wide designed to complete a durability test of 100,000 cycles. Appropriate amendments reflecting these deletions are made to the footnotes and references in Tables I, III, and IV of the standard.

In consideration of the foregoing, 49 CFR § 571.108, Motor Vehicle Safety Standard No. 108, is amended. . . .

Effective date: July 23, 1973. Because the amendment in part relieves a restriction and creates no additional burden, and in part is administrative in nature, it is found for good cause shown that an effective date earlier than 180 days after issuance is in the public interest.

(Section 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 USC 1392, 1407; delegation of authority at 38 F.R. 12147.)

Issued on June 15, 1973.

James E. Wilson  
Associate Administrator  
Traffic Safety Programs

**38 F.R. 16875**  
**June 27, 1973**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 69-19; Notice 7)

This notice amends 49 CFR § 571.108, Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices, and Associated Equipment*, to specify requirements for rectangular headlamps that may be used as an option in a four-headlamp system until September 1, 1976. The notice also sets forth NHTSA policy concerning rectangular headlamps after such time.

Interested persons have been afforded an opportunity to participate in the making of the amendment by a notice of proposed rulemaking (Docket No. 69-19; Notice 5) published on June 8, 1973 (38 F.R. 15082), and due consideration has been given to all comments received in response to the notice, insofar as they relate to matters within its scope.

The prior notice responded to a petition by General Motors. Under it, a rectangular headlamp approximately 6¾ in. by 4¼ in. would be permissible in five headlamp types (Types 1A through 5A) proposed for the two four-lamp front lighting Systems B and C proposed in Notice 3 to Docket No. 69-19 (37 F.R. 22801). Photometric values based upon Notice 3 were also proposed. As Notice 5 was technically an amendment of Notice 3, other headlighting requirements of the earlier proposal, such as those affecting mounting and aiming, were incorporated by reference.

Based upon comments to the docket and consideration of the issues involved, this amendment allowing an optional rectangular headlamp system differs from the proposal in several respects. The most important of these is its incorporation into Standard No. 108 as it is currently in effect, rather than into the amendment proposed by Notice 3. Thus, only two of the five proposed rectangular headlamp types

have been adopted, and the photometric, mounting, and other requirements are with slight exceptions those that are presently required for a four-headlamp system. Dimensions are slightly different from those proposed, at the request of General Motors which has modified its original experimental design.

The comments received expressed a variety of opinions on the rectangular headlamp proposal. The most common point of agreement was that there is no clear safety benefit or detriment in the use of rectangular headlamps. The NHTSA expressed concern in the notice "that there should not be such a proliferation of headlamp shapes and sizes that the motorist who has an immediate need to replace a headlamp has difficulty in finding one," and this concern was shared by several commenters. The points were also made that rectangular headlamps may be more expensive than conventional ones, and that they cannot be mechanically aimed with equipment currently in use. Finally, the question was raised whether rectangular headlamps might encounter more service performance difficulties than round ones.

Commenters generally supported the relief of a design restriction imposed by Standard No. 108, and this has been a prime determinant in the NHTSA's decision to permit certain rectangular headlamps. The NHTSA has determined that, by reducing the proposed number of types of rectangular headlamps from five to two, there will not be an undue proliferation of headlamps on the replacement market. Since these headlamps are optional and not mandatory, their cost is not a major relevant factor to be considered in determining whether they should be permitted. Rectangular headlamps can be optically

aimed, the method in predominant use in State motor vehicle inspections, and thus the NHTSA did not find the difficulty of mechanical aiming a persuasive argument. In addition, mechanical aimers capable of aiming rectangular headlamps are under development and should shortly be commercially available. The NHTSA is, of course, concerned as to whether the rectangular headlamps will encounter more service difficulties than conventional ones, but does not believe that the issue can be proven until such units are mass-produced and actually in service.

These amendments to Standard No. 108 represent an interim rather than a final decision on the issues of rectangular headlamps and appropriate dimensions. During 1974 and 1975 NHTSA expects the world motor vehicle industry, through international standards organizations and regular trade and professional associations, to arrive, if possible, at a consensus for one set of requirements, including dimensions for rectangular headlamps. Late in 1975, the NHTSA intends to announce its final decision on the matter: whether to remain with the requirements and dimensions adopted in this notice, to propose and adopt others, or to revoke the option. The agency at this point is not committing itself either to adopt any consensus dimensions or to perpetuate the ones desired by General Motors, though the field experience with such lamps over the next two years may be expected to have some influence in the final decision. Adoption of these optional dimensions by

a manufacturer during this interim period is at his own risk, and the cost of changing over from interim to permanent dimensions, if different, in 1977 model year tooling will not be considered a material factor in the decision on permanent dimensions. It is planned that the interim amendment will be in effect through August 31, 1976, and that no petitions will be entertained for variant headlamp dimensions or system configurations before the end of that period, to avoid multiplying stock items and disrupting supply channels.

In consideration of the foregoing, 49 CFR § 571.108, Motor Vehicle Safety Standard No. 108, is amended by adding a new paragraph S4.1.1.21. . . .

*Effective date:* January 1, 1974. Because the amendment creates an optional system without imposing new mandatory requirements on any person it is found for good cause shown that an effective date earlier than 180 days after the issuance of the amendment is in the public interest.

(Secs. 103, 119 Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on November 23, 1973.

James B. Gregory  
Administrator

**38 F.R. 33084**  
**November 30, 1973**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 72-22; Notice 2)

This notice amends Federal Motor Vehicle Safety Standard No. 108 to modify requirements for lighting equipment on mobile structure trailers.

The National Highway Traffic Safety Administration proposed on September 30, 1972 (37 F.R. 20573) that mobile structure trailers (commonly known as mobile homes) need be equipped only with tail lamps, stop lamps, and turn signal lamps if the manufacturer so chooses. As the agency observed in support of its proposal:

“Since January 1, 1968, mobile homes towed on their own wheels have been categorized as ‘trailers’ by the Federal motor vehicle safety standards, and required to conform to applicable Federal motor vehicle lighting specifications. Pursuant thereto, mobile homes in transit have been equipped with the full complement of trailer lighting equipment required by Standard No. 108: Tail lamps, stop lamps, license plate lamps, reflex reflectors, side marker lamps and reflectors, identification lamps, clearance lamps, and turn signal lamps.

“Because of the limited time a mobile home is on the public ways, manufacturers have been advised that compliance may be achieved by use of a lighting harness removable upon completion of transit. The Trailer Coach Association alleges that installation and removal expense of the wiring harness adds needless cost to ‘the only low cost housing available to the majority of people today.’ It has petitioned for an amendment of the lighting requirements such that reflex reflectors, license plate lamps, identification lamps, clearance lamps, and side marker lamps would not be required on mobile structure trailers ‘when moved under the authority of State issued

permits whose regulations specifically prohibit movement during hours of darkness.’ . . .

“Available information indicates that a mobile structure trailer, defined in 49 CFR 571.3 as ‘a trailer that has a roof and walls, is at least 10 feet wide, and can be used off road for dwelling or commercial purposes,’ cannot move over the public roads of any State without a permit containing the condition that the trailer shall not be moved during hours of darkness. In many jurisdictions, movement is also prohibited during inclement weather or under other conditions of reduced visibility. The safety benefit of requiring the full complement of trailer lighting equipment appears negligible under these circumstances, and unnecessary for the safety of the motoring public.”

The proposal was supported by numerous mobile home manufacturers and manufacturers associations, and opposed by a number of manufacturers and suppliers of lighting equipment, by a consumer group, one State, and other interested persons. Those who opposed the proposal argued that the presence of large mobile homes on the public highway is a traffic hazard *per se*, and that a full complement of lights should be required regardless of restrictions on movement. Comments were made that the existence of State laws did not necessarily preclude movement of mobile homes either at night or during periods of inclement weather. Most States, however, require special warning to motorists when mobile structure trailers exceeding a specified width and length are being transported. This warning may be in the form of flagmen, escort vehicles, flags on the towing vehicle, and “wide load” signs.

The NHTSA has concluded that motor vehicle safety does not require a full complement of

lighting devices on mobile structure trailers, whose use of the roads, as a class, is infrequent, and confined to daylight hours, when identification lamps, clearance lamps, and side marker lamps are not normally in use. Accordingly, the standard is being amended to specify that the only required lighting equipment for these vehicles is stop lamps, turn signal lamps, tail lamps, and rear reflex reflectors. The NHTSA has decided to include rear reflex reflectors as required equipment to provide some measure of protection when a mobile structure trailer is parked on the road shoulder at night or during periods of reduced visibility. Mobile structure trailers in interstate transit, however, must continue to meet the requirements of the Bureau of Motor Carrier Safety (49 CFR 393.17, 393.25).

In consideration of the foregoing, 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, is revised by adding a new section S4.1.1.25. . . .

*Effective Date:* May 29, 1974. Because the amendment relieves a restriction, and creates no additional burden, it is found for good cause shown that an effective date earlier than 180 days after issuance is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on April 24, 1974.

James B. Gregory  
Administrator

**39 F.R. 14946**  
**April 29, 1974**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 73-25; Notice 2)

This notice amends 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, to: (1) update the incorporated SAE standard on clearance lamps, (2) group test points for determining photometric conformance of backup lamps, (3) identify load requirements for testing variable load turn signal flashers, and (4) increase the allowable voltage drop in testing turn signal and hazard warning signal flashers.

These amendments are responsive to petitions by Truck Safety Equipment Institute, Signal Stat Corporation, Sylvania GTE and Hope-Tronics, Ltd., as discussed in the notice proposing the amendments, published on November 2, 1973 (38 F.R. 30280). The comments received in response to the notice were unanimous in supporting the change from SAE J592c to J592e as the referenced standard for clearance lamps, and in adopting the grouping of test points to determine compliance of backup lamps with photometric requirements. Comments also unanimously supported the identification of load requirements for testing variable load turn signal flashers, with one commenter suggesting that this might better be accomplished by referencing SAE J590e. The suggestion was not adopted, as J590e incorporates matter not proposed in Notice 1. The proposal that the maximum voltage drop across flashers be increased from 0.45 volt to 0.8 volt was supported by four vehicle

manufacturers with a fifth suggesting an increase to 0.6 volt. It was objected to by six commenters, all of them flasher manufacturers, on the grounds that it would result in a lessening of light output. The NHTSA recognized this possibility in Notice 1, but noted that the diminution would be so slight as to be undetectable by the human eye, while the public would be afforded the choice of a flasher with greater life expectancy. The amendment increasing the minimum voltage drop is adopted as proposed.

In consideration of the foregoing, 49 CFR 571.108 Motor Vehicle Safety Standard No. 108 is amended. . . .

*Effective date:* May 29, 1974. Because these amendments either relax a requirement or reflect existing widespread industry practice, and create no additional burden, it is found for good cause shown that an effective date earlier than one hundred eighty days after issuance is in the public interest.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on April 24, 1974.

James B. Gregory  
Administrator

**39 F.R. 15130**  
**May 1, 1974**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 73-33; Notice 2)

This notice amends 49 CFR § 571.108, Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices, and Associated Equipment*, to allow variable-load turn signal flashers on trucks that are capable of accommodating slide-in campers.

The proposal on which the amendment is based was published on January 3, 1974 (39 F.R. 822), pursuant to a petition by Ford Motor Company. Standard No. 108 presently requires turn signal failure indication in accordance with SAE Standard J588d, except on vehicles whose overall width is 80 inches or more, and on vehicles equipped to tow trailers. This has the effect of mandating use of fixed-load flashers, since special circuitry would be necessary to sense and indicate a failure in a variable-load system.

The NHTSA proposed to include trucks capable of accommodating slide-in campers in the group of vehicles not required to have a failure indicator (and hence allowed to have variable-load flashers). The problem presented by Ford may be summarized as follows: when camper turn signal lamps are added to the turn signal circuit of the vehicle carrying the camper, the flash rate will increase, to a level generally exceeding the maximum specified by Standard No. 108. Allowing a variable-load flasher will insure a uniform flash rate when the camper is installed.

In response to the opportunity afforded for comments, seven submittals were received. Six supported the proposal. The seventh commenter,

a foreign equipment manufacturer, opposed the proposal on the grounds that suitable flashers for similar applications are available in Europe.

The NHTSA has determined that the availability of variable-load flashers ensuring flash rate control within the limits of the standard is desirable, and should be permitted on trucks capable of accommodating slide-in campers, despite the lack of lamp failure indication. In order to make clear the intent of the regulation, language is being added to specify that the exception applies only to vehicles with variable-load flashers.

In consideration of the foregoing, paragraph S4.5.6 of 49 CFR 571.108, Motor Vehicle Safety Standard No. 108 is revised. . . .

*Effective date:* June 6, 1974. Because the amendment allows an additional option and creates no additional burden, it is found for good cause shown that an immediate effective date is in the public interest.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on May 31, 1974.

James B. Gregory  
Administrator

**39 F.R. 20063**  
**June 6, 1974**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108**

(Docket No. 74-16; Notice 2)

This notice amends 49 CFR 571.108, 571.122, and 571.123, Motor Vehicle Safety Standards Nos. 108, 122, and 123, to modify current requirements that apply to motor-driven cycles.

Interested persons have been afforded an opportunity to participate in the making of the amendment by a notice of proposed rulemaking published on April 12, 1974 (39 F.R. 13287) and due consideration has been given to all comments received in response to the notice, insofar as they relate to matters within its scope.

The prior notice responded to petitions by Cycles Peugeot, Ateliers de la Motobecane, and S.I.N.F.A.C., manufacturers, and Bermuda Bikes, Inc., and Robert F. Smith, retail dealers. The notice proposed that a motor-driven cycle whose speed attainable in 1 mile is 30 mph or less need not be equipped with turn signal lamps, and may be equipped with a stop lamp with one-half the photometric output otherwise required. Braking fade and recovery requirements also would not apply to these low-speed vehicles. Maximum stopping distance values for the various tests would be added for test speeds of 25, 20, and 15 mph. Finally, a braking control on the left handlebar would be a permissible alternative to the required right foot braking control.

The comments received addressed both areas of performance covered in the proposal, and areas where no standards currently exist, such as motors, transmissions, pedals, and a request for exemption from Standard No. 119, *Tires for Vehicles Other Than Passenger Cars*. As these latter comments cover matters beyond the scope of the proposal, this notice does not discuss them. The agency, however, has been formally petitioned for rulemaking covering transmissions and Standard No. 119, and will respond to the petitioners in the near future.

The decision by NHTSA not to establish a separate category of vehicle was objected to by

some commenters. In support of their request, they argued that the majority of motor-driven cycles have engines producing only 1.5 to 2 horsepower, and consequent low maximum speeds, reducing the need for forward lighting that is currently required of these vehicles. Petitioners submitted no data justifying their request. The NHTSA, however, intends to study the matter of forward lighting for low-powered two-wheeled vehicles through a research contract with the University of Michigan. When the contract is completed the agency will then decide whether further rulemaking is warranted.

The proposal distinguished motor-driven cycles on the basis of maximum speed attainable in 1 mile, rather than on horsepower, and the value selected, 30 mph, fell within the maximum (40 mph) and minimum (20 mph) suggested by commenters. The NHTSA has concluded therefore that the distinction should be adopted as proposed.

Some manufacturers requested restrictive controls on power plant output, apparently in fear that the engine of a vehicle with a top speed of 30 mph or less could be modified to exceed that speed, and therefore cause the vehicle to no longer comply with the Federal standards. This agency has not found that course of action to be practicable. The various ways to modify a vehicle after purchase cannot be anticipated or prevented at the manufacturer level. On the other hand, the great majority of consumers use their vehicles in the form in which they were purchased. The motor-driven cycle category itself contains a limitation of 5 horsepower, which will be applicable to the special lighting modifications. In the NHTSA's judgment, modifications by consumers and the consequent equipment requirements should continue to be regulated at the State level.

The fact that the agency took no action to propose a reduction in existing headlamp requirements for motor-driven cycles was criticized by several manufacturers as unduly restrictive because of the low speed and power output of their vehicles. No justification has been shown for such a change. Motor driven cycles therefore must have sufficient generating and/or battery capacity to meet the headlamp requirements.

There was no substantive objection to the actual proposals for omission of turn signals, reduced stop lamp photometrics, relief from brake fade requirements, inclusion of maximum allowable stopping distances for low speeds, and rear brake control placement. Accordingly, the standards are being amended in the manner proposed.

Standard No. 122 is also being amended to delete the final effectiveness test (S5.5) for those motor-driven cycles excused from the fade and recovery requirements. The purpose of the final effectiveness test is to check the stopping ability of the vehicle after the fade and recovery tests. Since this requirement has been eliminated for motor-driven cycles of low top-speed, the final effectiveness test is redundant, and an unneces-

sary duplication of the second effectiveness test. No safety purpose is served by its retention. Language is also added to the fade and recovery and final effectiveness test procedures (S7.6, S7.7, and S7.8), making it clear that they do not apply to motor-driven cycles whose speed attainable in 1 mile is 30 mph or less.

In consideration of the foregoing, 49 CFR Part 571 is amended . . . .

Effective date: October 14, 1974. As the amendments allow new options for compliance, relieve restrictions, and impose no additional burdens on regulated persons, it is found for good cause shown that an effective date earlier than 180 days after issuance of the amendments is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on September 6, 1974.

James B. Gregory  
Administrator

**39 F.R. 32914**  
**September 12, 1974**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

(Docket No. 69-19; Notice 9)

This notice amends 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices, and Associated Equipment*, to waive the requirement that there be a 4-inch minimum spacing between a front turn signal and a low-beam headlamp whenever the turn signal lamp's photometric output is at least two and one-half times the minimum required. The amendment is effective October 17, 1974.

Interested persons have been afforded an opportunity to participate in the making of the amendment by a notice of proposed rulemaking (Docket No. 69-19, Notice 3) published on October 25, 1972 (37 F.R. 22801), and due consideration has been given to the comments received in response to the notice.

In order to enhance detectability of front lamp function by oncoming drivers at a distance, Standard No. 108 through its incorporation of SAE Standard J588d, "Turn Signal Lamps," requires at least 4 inches of spacing between a front turn signal lamp and a low beam headlamp. However, as part of Notice 3, the NHTSA proposed in paragraph S8.12 that turn signal lamps and low beam headlamps could be closer if the candlepower output of the turn signal lamp is at least two and one-half times that specified for yellow turn signal lamps in the SAE standard. Mercedes-Benz of North Amer-

ica has asked the NHTSA to make an early decision on the proposal to facilitate its product development plans.

Comments in general supported the proposal. Some requested removal of the 4-inch limitation regardless of turn signal photometric output. Others felt that the photometric values of all front turn signal lamps should be two and one-half times the present minimum. The NHTSA has decided to amend the standard primarily as proposed, but with reference to the grouped test points of Figure 1 of the standard rather than to the individual test points of J588.

In consideration of the foregoing, 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, is amended by adding new paragraph S4.3.1.7 . . . .

*Effective date:* October 17, 1974. Because the amendment relieves a restriction without imposing new requirements on any person, it is found for good cause shown that an effective date earlier than 180 days after the issuance of the amendment is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on September 12, 1974.

James B. Gregory  
Administrator



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108**  
**Lamps, Reflective Devices and Associated Equipment**

This notice amends 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, to resolve an unintended ambiguity between paragraphs S4.1.1.11 and S4.1.1.12, and paragraph S4.3.1.1.

Paragraphs S4.1.1.11, S4.1.1.12 and S4.1.1.22 allow photometric conformance of parking lamps, stop lamps, taillamps, turn signal lamps, and backup lamps to be determined by measurement of sums of values within specified groups of test points. Paragraph S4.3.1.1 prohibits vehicle equipment obscuring the photometric output "at any test point" specified in SAE materials unless auxiliary lighting equipment is provided that meets all photometric requirements. Standard No. 108 can thus be interpreted as requiring the addition of auxiliary lighting equipment if, for example, a single test point of a taillamp is obscured by part of the vehicle, even though the taillamp might meet the group requirements of Figure 1. NHTSA is therefore amending paragraph S4.3.1.1 to remove the ambiguity.

In consideration of the foregoing the second sentence of paragraph S4.3.1.1 of 49 CFR 571.108 Motor Vehicle Safety Standard No. 108 is revised.

*Effective date:* April 21, 1975. Because the amendment clarifies an ambiguity and creates no additional burden on any person, it is found for good cause shown that an effective date earlier than 180 days after issuance is in the public interest.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on April 15, 1975.

James B. Gregory  
Administrator

**40 F.R. 17574**  
**April 21, 1975**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 74-34; Notice 2)

This notice amends 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices, and Associated Equipment*, to define in objective terms an acceptable level of surface gloss and/or haze for plastic materials used for lamp lenses following an outdoor exposure test. The amendment is effective upon publication in the *Federal Register*. It is based upon a notice of proposed rulemaking published on September 30, 1974 (39 F.R. 35179).

Paragraph S4.1.2 of Standard No. 108 incorporates by reference SAE Recommended Practice J576b, *Plastic materials for use in optical parts, such as lenses and reflectors, of motor vehicle lighting devices*. This practice requires in pertinent part (Paragraph 4.2.2) that, following an outdoor exposure test of 2 years' duration, exposed samples, when compared with unexposed control samples, shall not show haze or loss of surface luster. This requirement has been interpreted as forbidding any haze or loss of surface luster, and has prohibited the use of plastics of uncoated polycarbonate resin, as these plastics show a surface change after outdoor weathering. General Electric Company petitioned for rulemaking to amend Standard No. 108 to define in objective terms an acceptable level of surface gloss, so that uncoated polycarbonate plastic may be used for exterior automotive applications. Although a protective coating is available for the plastic, GE stated that vehicle manufacturers are reluctant to use it because of the cost involved, "from 3-40 cents per lens depending upon the size."

In support of its petition GE submitted a large body of technical information showing the effect of surface gloss reduction on the photometric performance and signaling effectiveness of various types of lighting devices used on

motor vehicles. These tests showed that at the end of a 3-year period the photometric output through uncoated polycarbonate lenses decreases, on the average, less than 10 percent. In GE's view, deglossing to haze levels of 50 percent does not appear significantly to affect the overall photometric performance and signaling effectiveness of a lamp. The effect of haze is to scatter light from the point of maximum intensity to the wider angle test points, resulting in a diminution of light output at the former, and an increase at the latter. In accordance with GE's test data and suggestion, however, the National Highway Traffic Safety Administration (NHTSA) proposed that haze level should not exceed 30 percent. NHTSA tentatively found that the proposed amendments would enhance traffic safety. Polycarbonate lenses appear to offer some benefits lacking in conventional plastics in terms of heat resistance and higher impact strength.

It was also proposed to update the referenced SAE Recommended Practice J576b, to J576c, effective January 1, 1976. This substitution had been previously proposed (Docket No. 69-19; Notice 3, 37 F.R. 22806) and favorably commented upon. The only difference is that J576c requires a 3-year exposure test while J576b requires only a 2-year one.

Comments submitted in response to the notice generally indicated support by vehicle manufacturers, and opposition by manufacturers of lamps and plastic materials. It was argued that the data in the petition did not support a relaxation, and that further data and study were necessary before a decision could be made. These arguments do not appear to have merit. On the basis of the comments, however, the amendment excludes reflex reflectors. The current higher

performance level is justified for reflector materials, which do not have a light source shining through them. In addition, the amendment specifies that the tests are performed on lens materials rather than finished lenses.

The economic effect of the amendment is that by allowing use of uncoated polycarbonate materials, a lens possessing superior heat resistance and impact durability will be made available at a lesser cost.

In consideration of the foregoing, 49 CFR 571.108 is amended. . . .

*Effective date:* June 18, 1975. Since the amendment does not require compliance before

January 1, 1976 and allows optional compliance until then, it is found for good cause shown that an effective date earlier than 180 days after issuance is in the public interest.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on June 12, 1975.

James B. Gregory  
Administrator

**40 F.R. 25677**  
**June 18, 1975**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 75-8; Notice 2)

This notice amends 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices, and Associated Equipment*, to remove the restriction that would disallow manufacture of vehicles with four-lamp rectangular headlamp systems on and after September 1, 1976.

The NHTSA proposed on April 30, 1975 (40 FR 18795) the termination of the amendment to Standard No. 108 adopted November 30, 1973 (38 FR 33084), that disallowed use of rectangular headlamp systems on motor vehicles manufactured on or after September 1, 1976. In allowing probationary use of the new headlamp system, this agency had concluded that the interests of safety required a period in which the systems could be evaluated as to on-road performance and availability of replacements. A final decision was scheduled for late in 1975 on whether to allow continued use of such systems, and if so, whether to retain the current dimensions or to propose modifications.

The NHTSA has decided to remove the termination date of September 1, 1976, thus allowing indefinite use of four-lamp rectangular headlamp systems, and to retain the current dimensions. In the period that rectangular systems have been in use no service or supply problems have come to this agency's attention. The lamps have been tested and approved by the American Association of Motor Vehicle Administrators. No comments to the notice of April 30, 1975, objected to the removal of the termination date, and all those who commented on the

issue supported it. The dimensions specified in Standard No. 108 have been adopted by the Society of Automotive Engineers in SAE Standard J579c, "Sealed Beam Headlamp Units for Motor Vehicles," December 1975, and are now accepted by the motor vehicle and lighting industries. There has been occasional criticism that these systems increase vehicle weight and cost without a corresponding benefit in safety. Any weight increases are very minor, however. The purpose of the amendment was to remove a design restriction and to allow manufacturers and consumers the freedom to choose an alternative but equivalent headlighting system. The cost increase is not, therefore, mandated by the standard.

The Administrator also requested comments in the April 30, 1975, notice as to the advisability of proposing an amendment to Standard No. 108 that would allow a single two-lamp rectangular system. Commenters generally supported the concept of a two-lamp system, advising dimensions based upon SAE recommendations. The subject is now under consideration by the agency.

In consideration of the foregoing, paragraph S4.1.1.21 of 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, is amended by deleting the phrase "manufactured between January 1, 1974 and September 1, 1976" and substituting the phrase "manufactured on or after January 1, 1974".

*Effective date:* November 24, 1975. Because the amendment relieves a restriction and creates no additional burden on any person it is found

Effective: November 24, 1975

for good cause shown that an effective date earlier than 180 days after issuance is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51)

Issued on November 17, 1975.

James B. Greory  
Administrator

**40 F.R. 54426**  
**November 24, 1975**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 75-15; Notice 2)

This notice amends 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices and Associated Equipment*, to modify requirements for clearance lamps on vehicles of special configuration.

Notice of the amendment was published on June 5, 1975 (40 FR 24204), and an opportunity afforded for comment. The NHTSA proposed that the inboard visibility angle of 45 degrees for clearance lamps need not be met on a vehicle where it is necessary to mount the lamps on surfaces other than the extreme front or rear to indicate the overall width or for protection from damage during normal operation of the vehicle. Restricted inboard visibility angles of clearance lamps are encountered on many types of vehicles other than boat trailers and horse trailers. Examples are (1) front clearance lamps that are mounted on a truck body behind the cab and below the top of the cab, and (2) front and rear clearance lamps mounted on the fenders of trucks and trailers such as liquid and bulk commodity vehicles and cement mixer carriers.

Eleven comments were submitted by manufacturers, trade associations, and the California Highway Patrol. Ten of these supported the

amendment. The sole dissenter felt that there might be traffic situations where visibility at some inboard positions would be important. Trailmobile and Recreational Vehicle Industry Association requested modifications to Standard No. 108 that were beyond the scope of the proposal and thus were not considered.

In consideration of the foregoing, 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, is amended. . . .

*Effective date:* November 24, 1975. Because the amendment relieves a restriction and creates no additional burden upon any person, it is found for good cause shown that an effective date earlier than 180 days after issuance is in the public interest.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51)

Issued on November 17, 1975.

James B. Gregory  
Administrator

40 F.R. 54427  
November 24, 1975



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 69-19; Notice 10)

This notice amends 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices, and Associated Equipment*, to clarify the electrical terminal specifications for Type 1A rectangular headlamps.

Standard No. 108 was amended on November 30, 1973, (38 FR 33084) to specify requirements for rectangular headlamps that may be used as an option in a four-headlamp system. Figure 2 of the amended standard specifies certain interchangeability features of Type 1A and 2A rectangular headlamps, including location and arrangement of the electrical terminals. The three terminals shown in Figure 2 are designed as "ground," "lower beam," and "Type 2A upper beam." The terminal designated as "lower beam" is used as the terminal for the upper beam on Type 1A headlamps. This is implied by the notation, "no connection or terminal for Type 1A headlamp," under the phrase "Type 2A upper beam," since the ground is not a connection, but the figure may not be sufficiently clear on that point. In order to make it clear, this notice amends Figure 2 so that the "lower beam" terminal is redesignated as the "Type 2A lower beam or Type 1A upper beam" terminal.

It has also come to the attention of this agency that certain dimensional tolerances of Figure 2 are unnecessarily restrictive and that other methods of dimensioning are more applicable in certain cases. In addition, an optional terminal

configuration permitted for other headlamps is not currently included for the Type 1A and 2A headlamps.

Accordingly, Figure 2 is being revised to provide a tolerance change to the overall lamp width (6.58 inches) and height (4.20 inches). The lamp corner radius of 0.56 inch is changed to 0.54 inch, a terminal spacing of 0.333 inch is changed to 0.335 inch, and an optional terminal configuration is specified. A dimension is included for the seating lugs, and a different method of dimensioning the locating lug is specified.

These changes do not affect interchangeability or performance of the lamps and are specified only to relieve unnecessary restrictions.

*Effective date:* December 23, 1975. Because the amendment creates no additional burden upon any person it is found for good cause shown that an immediate effective date is in the public interest.

(Sec. 103, 119, Pub L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51)

Issued on December 3, 1975.

James B. Gregory  
Administrator

40 F.R. 59349  
December 23, 1975



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 69-19; Notice 11)

This notice amends 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, *Lamps, Reflective Devices, and Associated Equipment*, primarily to modify requirements applicable to turn signal lamps. The amendments are effective January 5, 1976.

Triangle Home Products has petitioned for immediate adoption of SAE Standard J588e, *Turn Signal Lamps*, September 1970, as the referenced standard for that item of lighting equipment. This change was originally proposed by NHTSA in Notice 3, Docket No. 69-19 (37 F.R. 22801). SAE J588e differs from J588d in several respects, the principal one being that the minimum effective projected luminous area of all turn signal lamps is 8 square inches. SAE J588d had divided turn signal lamps into two classes, A and B, but this no longer occurs in J588e. Class A turn signal lamps were those with a lens area not less than 12 square inches, while Class B were those whose minimum lens area was not less than 3.5 square inches. The amendment means that the minimum required luminous area of turn signals on passenger cars, and on other vehicles (except motorcycles) less than 80 inches in overall width, is increased to 8 square inches from 3.5 square inches, while that of larger vehicles is reduced to 8 from 12 square inches. The agency expects there to be no effect upon safety from this reduction as the photometric requirements are unchanged.

This proposal was not uniformly supported, several manufacturers objecting that the increase in minimum area from 3.5 square inches to 8 square inches was unnecessary, and suggesting 5 square inches instead. The NHTSA notes, however, that the SAE adopted J588e after many tests that demonstrated that the increase to 8

square inches, by providing more signal area, resulted in better estimation of the position of the signaling vehicle as seen by drivers of on-coming and following vehicles. Because of the increased photometrics for turn signal lamps that became effective January 1, 1970, it is difficult to manufacture lamps smaller than 8 square inches and produce the required light output. Finally, an area smaller than 8 square inches would increase the unit area intensity to a level that is likely to be distressing to many drivers. It is likely, however, in spite of the objections to the proposal that the industry conforms at present. The NHTSA surveyed the turn signal lens of 18 contemporary domestic and foreign passenger cars, finding no lens area less than 8 square inches, with the average at 14. However, the amendments permit continued compliance with J588d, on an optional basis, until September 1, 1978.

Notice 3 also proposed the adoption of updated SAE Standards, J585d and J586c, for tail lamps and stop lamps respectively. There were no objections to these proposals. The principal difference in the updated standards is the inclusion of definitions of and photometering instructions for multiple compartment lamps and multiple lamp arrangements. SAE J586c also establishes a minimum of 8 square inches for the effective projected luminous lens area of stop lamps, and, in a combination stop lamp-turn signal lamp, prohibits operation of the stop lamp while the turn signal is flashing. SAE J585d, in a change from J585c, requires measurement of photometrics not less than 10 feet from the photometer screen, the previous distance being a minimum of 4 feet. Because of these changes, the NHTSA is permitting continued compliance with J585c and J586b until September 1, 1978.

Accordingly, Standard No. 108 is being amended to incorporate the three new SAE Standards. Editorial amendments are also made to S4.1.1.6, S4.1.1.7, S4.1.1.12, S4.5.5 and S5.1 to conform them to the new requirements.

In consideration of the foregoing, 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, is amended. . . .

*Effective date:* January 5, 1976. Because the effect of the amendments is to allow compliance with either the new or the existing requirements until September 1, 1978, an immediate effective

date imposes no additional burden on any person and is found for good cause shown to be in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.50)

Issued on December 23, 1975.

James B. Gregory  
Administrator

**41 F.R. 765**  
**January 5, 1976**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment

(Docket No. 69-19; Notice 12)

This notice amends 49 CFR 571.108, Motor Vehicle Safety Standard No. 108, to allow conformance with SAE Standard J579c, "Sealed Beam Headlamp Units for Motor Vehicles", December 1974 as an option to compliance with the presently referenced SAE Standard J579a.

On October 25, 1972, the National Highway Traffic Safety Administration proposed (37 FR 22801) as part of a comprehensive rulemaking action that SAE Standard J579a, as currently referenced in Standard No. 108, be replaced by SAE Standard J579b. Except for the increased maximum candlepower (75,000 candlepower) specified in SAE Standard J579b, the commenters generally supported this proposal. SAE Standard J579c has added a definition of H-V axis and a description of rectangular sealed beam headlighting systems; otherwise it is identical to J579b.

SAE Standard J579c provides compatibility between headlight beam positions regardless of whether the headlamp is aimed by mechanical, optical, or visual methods, unlike SAE Standard J579a, which results in different beam positions if the lamp is aimed by mechanical methods instead of optical or visual methods. Since the headlamp beam position provided by the optical and visual aim methods is higher and results in greater seeing distance for the driver, the same improvement should be afforded by mechanical aim methods.

SAE Standard J579c contains minor changes in photometrics at certain test points which also provide improved lighting, but are of such a minor technical nature that allowance of these values would be a relief of a restriction. However, this amendment of Standard No. 108 restricts the maximum candlepower output, for the present time, to 37,500. The question of allowing the SAE maximum of 75,000 candlepower was raised in the notice of October 25, 1972, and will be considered in future rulemaking actions.

In consideration of the foregoing, amendments are made to 49 CFR § 571.108, Motor Vehicle Safety Standard No. 108. . . .

*Effective date:* January 8, 1976. Because the amendment allows an option, relieves restrictions, and creates no additional burden on any person, it is found for good cause shown that an immediate effective date is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.50)

Issued on January 5, 1976.

James B. Gregory  
Administrator

41 F.R. 1483  
January 8, 1976



## MOTOR VEHICLE SAFETY STANDARD NO. 108

### Lamps, Reflective Devices, and Associated Equipment—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses, Trailers and Motorcycles (Docket No. 69-18)

**S1. Purpose and scope.** This standard specifies requirements for original and replacement lamps, reflective devices, and associated equipment necessary for signaling and for the safe operation of motor vehicles during darkness and other conditions of reduced visibility.

**S2. Application.** This standard applies to passenger cars, multipurpose passenger vehicles, trucks, buses, trailers (except pole trailers and trailer converter dollies), and motorcycles, and to lamps, reflective devices, and associated equipment for replacement of like equipment on vehicles to which this standard applies.

**S3. Definitions.** "Flash" means a cycle of activation and deactivation of a lamp by automatic means continuing until stopped either automatically or manually.

["Speed attainable in 1 mile" means the speed attainable by accelerating at maximum rate from a standing start for 1 mile on a level surface. (39 F.R. 32914—September 12, 1974. Effective: 10/14/74)"]

#### **S4. Requirements.**

##### **S4.1 Required motor vehicle lighting equipment.**

**S4.1.1** Except as provided in succeeding paragraphs of S4.1.1, each vehicle shall be equipped with at least the number of lamps, reflective devices and associated equipment specified in Tables I and III, as applicable. Required equipment shall be designed to conform to the SAE Standards or Recommended Practices referenced in those tables. Table I applies to multipurpose passenger vehicles, trucks, trailers, and buses, 80 or more inches in overall width. Table III applies to passenger cars and motorcycles and to

multipurpose passenger vehicles, trucks, trailers, and buses less than 80 inches in overall width.

**S4.1.1.1** [A truck tractor need not be equipped with turn signal lamps mounted on the rear if the turn signal lamps at or near the front are so constructed (double-faced) and so located that they meet the requirements for double-faced turn signals specified in SAE Standard J588e, "Turn Signal Lamps," September 1970. (41 F.R. 765—January 5, 1976. Effective: 1/5/76)"]

**S4.1.1.2** A truck tractor need not be equipped with any rear side marker devices, rear clearance lamps, and rear identification lamps.

**S4.1.1.3** Intermediate side marker devices are not required on vehicles less than 30 feet in overall length.

**S4.1.1.4** Reflective material conforming to Federal Specification L-S-300, "Sheeting and Tape, Reflective; Nonexposed Lens, Adhesive Backing," September 7, 1965, may be used for side reflex reflectors if this material, as used on the vehicle, meets the performance standards in Table I of SAE Standard J594d, "Reflex Reflectors," March 1967.

**S4.1.1.5** [The turn signal operating unit on each passenger car, and multipurpose passenger vehicle, truck, and bus less than 80 inches in overall width manufactured on or after January 1, 1973, shall be self-cancelling by steering wheel rotation and capable of cancellation by a manually operated control. (36 F.R. 9070—May 19, 1971. Effective: 1/1/73)"]

**S4.1.1.6** [Each stop lamp on any motor vehicle manufactured between January 1, 1973, and September 1, 1978, may be designed to conform to SAE Standard J586b, *Stop Lamps*, June 1966. It shall meet the photometric minimum candle-

power requirements for Class A red turn signal lamps specified in SAE Standard J575d, *Tests for Motor Vehicle Lighting Devices and Components*, August 1967. Each such lamp on a passenger car and on a multipurpose passenger vehicle, truck, trailer or bus less than 80 inches in overall width shall have an effective projected luminous area not less than  $3\frac{1}{2}$  square inches. If multiple compartment lamps or multiple lamps are used, the effective projected luminous area of each compartment or lamp shall be not less than  $3\frac{1}{2}$  square inches; however, the photometric requirements may be met by a combination of compartments or lamps. (41 F.R. 765—January 5, 1976. Effective: 1/5/76)】

**54.1.1.7** 【Each turn signal lamp on any motor vehicle except motorcycles, manufactured between January 1, 1972, and September 1, 1978, may be designed to conform to SAE Standard J588d, *Turn Signal Lamps*, June 1966, and shall meet the photometric minimum candlepower requirements for Class A turn signal lamps specified in SAE Standard J575d, *Tests for Motor Vehicle Lighting Devices and Components*, August 1967. Each such lamp on a passenger car and on a multipurpose passenger vehicle, truck, trailer or bus less than 80 inches in overall width shall have an effective projected luminous area not less than  $3\frac{1}{2}$  square inches. If multiple compartment lamps or multiple lamps are used, the effective projected luminous area of each compartment or lamp shall be not less than  $3\frac{1}{2}$  square inches; however, the photometric requirements may be met by a combination of compartments or lamps. Each such lamp on a multipurpose passenger vehicle, truck, trailer or bus 80 inches or more in overall width shall have an effective projected luminous area not less than 12 square inches. (41 F.R. 765—January 5, 1976. Effective: 1/5/76)】

**54.1.1.8** 【For each passenger car, and each multipurpose passenger vehicle, truck, trailer, and bus of less than 80 inches in overall width, the photometric minimum candlepower requirements for side marker lamps specified in SAE Standard J592e "Clearance, Side Marker, and Identification Lamps," July 1972, may be met for all inboard test points at a distance of

15 feet from the vehicle and on a vertical plane that is perpendicular to the longitudinal axis of the vehicle and located midway between the front and rear side marker lamps. (39 F.R. 15130—May 1, 1974. Effective: 5/29/74)】

**54.1.1.9** Boat trailers need not be equipped with both front and rear clearance lamps, provided an amber (to front) and red (to rear) clearance lamp is located at or near the midpoint on each side of the trailer so as to indicate its extreme width.

**54.1.1.10** Multiple license plate lamps and backup lamps may be used to fulfill the requirements of the SAE Standards applicable to such lamps referenced in Tables I and III.

**54.1.1.11** 【A parking lamp is not required to meet the minimum photometric values at each test point specified in Table 1 of SAE Standard J222, "Parking Lamps (Position Lamps)," if the sum of the candlepower measured at the test points within the groups listed in Figure 1 is not less than the sum of the candlepower values for such test points specified in J222. (37 F.R. 21328—October 7, 1972. Effective: 1/1/73)】

**54.1.1.12** 【A taillamp, stop lamp, or turn signal lamp is not required to meet the minimum photometric values at each test point specified in the referenced SAE Standards, if the sum of the candlepower measured at the test points is not less than that specified for each group listed in Figure 1, or for motorcycle turn signal lamps, not less than one-half of such sum. (41 F.R. 765—January 5, 1976. Effective: 1/5/76)】

**54.1.1.13** (Deleted, 38 F.R. 16875—June 27, 1973. Effective: 7/23/73)

**54.1.1.14** (Deleted, 38 F.R. 16875—June 27, 1973. Effective: 7/23/73)

**54.1.1.15** (Deleted, 38 F.R. 16875—June 27, 1973. Effective: 7/23/73)

**54.1.1.16** 【All passenger cars and multipurpose passenger vehicles, trucks, and buses of less than 80 inches overall width shall be equipped with turn signal operating units designed to complete a durability test of 100,000 cycles. (38 F.R. 16875—June 27, 1973. Effective: 7/23/73)】

**[S4.1.1.17** A trailer that is less than 30 inches in overall width may be equipped with only one of each of the following lamps and reflective devices, located at or near its vertical centerline: Tail lamp, stop lamp, and rear reflex reflector. (38 F.R. 16875—June 27, 1973. (Effective: 7/23/73)]

**[S4.1.1.18** A trailer that is less than 6 feet in overall length, including the trailer tongue, need not be equipped with front side marker lamps and front side reflex reflectors. (38 F.R. 16875—June 27, 1973. Effective: 7/23/73)]

**[S4.1.1.19** A lamp manufactured on or after January 1, 1974, and designed to use a type of

bulb that has not been assigned a mean spherical candlepower rating by its manufacturer and is not listed in SAE Standard J573d, "Lamp Buis and Sealed Units," December 1968, shall meet the applicable requirements of this standard when used with any bulb of the type specified by the lamp manufacturer, operated at the bulb's design voltage. A lamp that contains a sealed-in bulb shall meet these requirements with the bulb operated at the bulb's design voltage. (38 F.R. 16230—June 21, 1973. Effective: 1/1/74)]

**[S4.1.1.20** Except for a lamp having a sealed-in bulb, a lamp manufactured on or after January 1, 1974 shall meet the applicable require-

Groups	Test Points Deg	Parking Lamps	Group Totals, CP								
			Tail Lamps			Red Stop and Turn Signal Lamps			Yellow Turn Signal Lamps		
			One	Two	Three	One	Two	Three	One	Two	Three
1	20L-5U 20L-H 20L-5D 10L-10U 10L-10D	2.8	1.6	2.7	3.8	55	66	80	135	165	190
2	10U-V 5U-10L 5U-10R	2.4	2.1	3.6	5.5	85	100	115	210	251	290
3	10L-H 5L-5U 5L-5D	4.2	3.4	5.3	8.0	140	167	195	350	420	490
4	5U-V H-5L H-V H-5R 5D-V	16.8	9.6	16.5	24.0	380	449	520	950	1,130	1,295
5	5R-5U 5R-5D 10R-H	4.2	3.4	5.3	8.0	140	167	195	350	420	490
6	5D-10L 5D-10R 10D-V	2.4	2.1	3.6	5.5	85	100	115	210	251	290
7	10R-10U 10R-10D 20R-5U 20R-H 20R-5D	2.8	1.6	2.7	3.8	55	66	80	135	165	190

Maximum-Rear Lamps Only

15      20      25      300      360      420      900      900      900

FIGURE 1.—Grouped photometric minimum candlepower requirements for devices using one, two, or three separately lighted compartments, or for one, two, or three lamps used in a single design location to perform a single function.

**[37 F.R. 21328—October 7, 1972. Effective: 1/1/73]**

ments of this standard when tested with a bulb whose filament is positioned within  $\pm 0.010$  inch of the nominal design position specified in SAE Standard J573d, "Lamp Bulbs and Sealed Units," December 1968, or specified by the bulb manufacturer. (38 F.R. 16230—June 21, 1973. Effective: 1/1/74)]

**54.1.1.21** [Instead of a headlighting system of two Type 1 headlamps and two Type 2,  $5\frac{3}{4}$ -inch headlamps, a vehicle manufactured on or after January 1, 1974, may be equipped with a headlighting system of two Type 1A headlamps and two Type 2A headlamps, that meet the following requirements.

(a) Each Type 1A headlamp and Type 2A headlamp shall be designed to conform to the requirements for a Type 1 headlamp and Type 2,  $5\frac{3}{4}$ -inch headlamp respectively, as specified in

any SAE Standard or Recommended Practice, referenced or subreferenced by Tables I and III, except as provided below.

(b) Each Type 1A and Type 2A headlamp shall be designed for 12.8 volts, and to conform to the applicable dimensional requirements and specifications of Figure 2. Each Type 1A headlamp shall be designed for a maximum of 50 watts. Each Type 2A headlamp shall be designed for a maximum of 60 watts for each filament.

(c) The following SAE Standards and Recommended Practices or portions thereof, do not apply:

(i) SAE Standard J571b, "Dimensional Specifications for Sealed Beam Headlamp Units", April 1965.

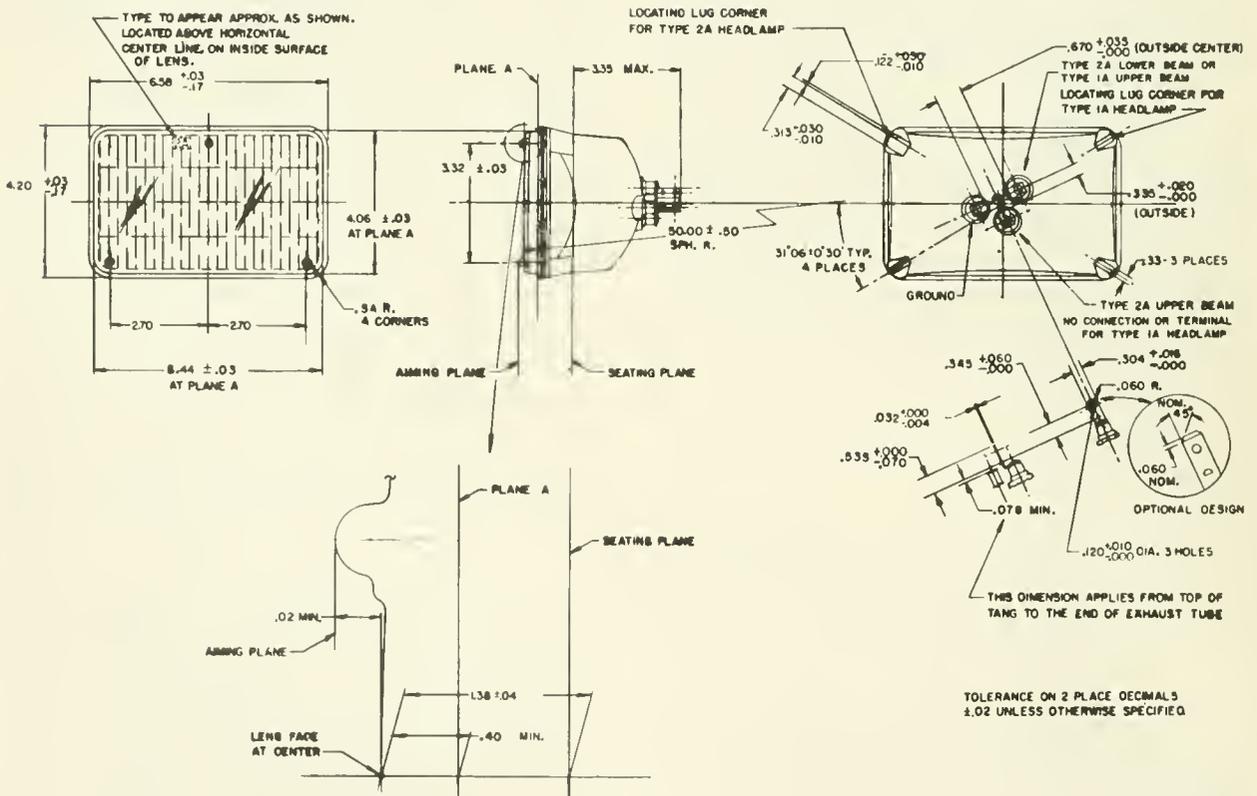


FIGURE 2  
 RECTANGULAR HEADLAMP SPECIFICATIONS

(ii) SAE Standard J573d, "Lamp Bulbs and Sealed Units", December 1968.

(iii) Figure 1, SAE Recommended Practice J602, "Headlamp Aiming Device for Mechanically Aimable Sealed Beam Headlamp Units", August 1963.

(iv) Paragraph 2 of "Retaining Ring Requirements", and the paragraph "Proper Seating of Sealed Beam Unit", SAE Standard J580a, "Sealed Beam Headlamp", June 1966. (40 F.R. 54426—November 24, 1975. Effective: 11/24/75)】

Group	Test point, deg	Total for Group, cd (see notes a, b)
1*	45L-5U -----	45
	45L-H -----	
	45L-5D -----	
2*	30L-H -----	50
	30L-5D -----	
3	10L-10U -----	100
	10L-5U -----	
	V-10U -----	
	V-5U -----	
	10R-10U -----	
4	10R-5U -----	360
	10L-H -----	
	10L-5D -----	
	V-H -----	
	V-5D -----	
5*	10R-H -----	50
	10R-5D -----	
	10R-5D -----	
6*	45R-5U -----	45
	45R-H -----	
	45R-5D -----	

\* When two lamps of the same or symmetrically opposite design are used, the reading along the vertical axis and the averages of the readings for the same angles left and right of vertical for one lamp shall be used to determine compliance with the requirements. If two lamps of differing designs are used, they shall be tested individually and the values added to determine that the combined units meet twice the candela requirements.

† When only one backup lamp is used on the vehicle, it shall be tested to twice the candela requirements.

FIGURE 3—Minimum Luminous Intensity Requirements for Backup Lamps

【54.1.1.22 A backup lamp is not required to meet the minimum photometric values at each test point specified in Table I of SAE Standard J593c "Backup Lamps" if the sum of the candlepower measured at the test points within each group listed in Figure 3 is not less than the group totals specified in that figure. (39 F.R. 15130—May 1, 1974. Effective: 5/29/74)】

【54.1.1.23 Variable load turn signal flashers shall comply with voltage drop and durability requirements with the maximum design load connected and shall comply with starting time, flash rate, and percent current "on" time requirements both with the minimum and with the maximum design load connected. (39 F.R. 15130—May 1, 1974. Effective: 5/29/74)】

【54.1.1.24 The lowest voltage drop for turn signal flashers and hazard warning signal flashers measured between the input and load terminals shall not exceed 0.8 volt. (39 F.R. 15130—May 1, 1974. Effective: 5/29/74)】

【54.1.1.25 The only required equipment for mobile structure trailers is stoplamps, taillamps, rear reflex reflectors, and turn signal lamps. (39 F.R. 14946—April 29, 1974. Effective: 5/29/74)】

【54.1.1.26 A motor-driven cycle whose speed attainable in 1 mile is 30 mph or less need not be equipped with turn signal lamps. (39 F.R. 32914—September 12, 1974. Effective: 10/14/74)】

【54.1.1.27 A motor-driven cycle whose speed attainable in 1 mile is 30 mph or less may be equipped with a stop lamp whose photometric output for the groups of test points specified in Figure 1 is at least one-half of the minimum values set forth in that figure. (39 F.R. 32914—September 12, 1974. Effective: 10/14/74)】

【54.1.1.28 Each taillamp on any motor vehicle manufactured before September 1, 1978, may be designed to conform to SAE Standard J585c, *Tail Lamps*, June 1966.

54.1.1.29 Each turn signal lamp on a motor-cycle manufactured between January 1, 1973, and September 1, 1978, may be designed to conform to SAE Standard J588d, *Turn Signal Lamps*, June 1966.

**5.4.1.1.30** Except as provided in paragraph S4.1.1.12 of this standard, each turn signal lamp on a motorcycle shall meet one-half of the minimum photometric values at each test point specified for Class A turn signal lamps in SAE Standard J575d, *Tests for Motor Vehicle Lighting Devices and Components*, August 1967, or in SAE Standard J588e, *Turn Signal Lamps*, September 1970, as applicable.

**5.4.1.1.31** Each turn signal lamp on a motorcycle manufactured on and after January 1, 1973, shall have an effective projected luminous area not less than  $3\frac{1}{2}$  square inches.

**5.4.1.1.32** Note 6 of Table 1 in SAE Standard J588e, *Turn Signal Lamps*, September 1970, does not apply. A stop lamp that is not optically combined with a turn signal lamp shall remain activated when the turn signal is flashing. (41 F.R. 765—January 5, 1976. Effective: 1/5/76)】

**5.4.1.1.33** 【Headlamps may conform to SAE Standard J579c, *Sealed Beam Headlamp Units for Motor Vehicles*, December 1974, except that:

(a) In Table I of SAE Standard J579c, the maximum candela at any test point shall not exceed 37,500;

(b) In Table II of SAE Standard J579c, the combined maximum candela at any test point shall not exceed 37,500; and

(c) At a voltage of 12.8 volts, the maximum design wattage, with an allowable tolerance of plus 7.5 percent, shall be as follows: 50 watts for Type 1 ( $5\frac{3}{4}$ -inch); 37.5 watts for Type 2 ( $5\frac{3}{4}$ -inch) high beam; and 60 watts Type 2 ( $5\frac{3}{4}$ -inch) low beam, Type 2 (7-inch) low beam, and Type 2 (7-inch) high beam. (41 F.R. 1483—January 8, 1976. Effective: 1/8/76)】

**5.4.1.2** 【Plastic materials used for optical parts such as lenses and reflectors shall conform to SAE Recommended Practice J576c, May 1970, except that:

(a) Plastic materials manufactured before January 1, 1976, may conform to SAE J576b, August 1966;

(b) Plastic lenses used for inner lenses or those covered by another material and not exposed directly to sunlight shall meet the requirements of paragraphs 3.4 and 4.2 of SAE J576b,

or J576c, as applicable, when covered by the outer lens or other material;

(c) After the outdoor exposure test, the haze and loss of surface luster of plastic materials used for lamp lenses shall not be greater than 30 percent haze as measured by ASTM-1003-61, "Haze and Luminous Transmittance of Transparent Plastics;" and

(d) After the outdoor exposure test, plastic materials used for reflex reflectors shall meet the appearance requirements of paragraph 4.2.2 of SAE J576b or J576c as applicable. (40 F.R. 25677—June 18, 1975. Effective: 6/18/75)】

**5.4.1.3** No additional lamp, reflective device, or other motor vehicle equipment shall be installed that impairs the effectiveness of lighting equipment required by this standard.

**5.4.1.4** Each school bus shall be equipped with a system of either:

(a) Four red signal lamps designed to conform to SAE Standard J887, "School Bus Red Signal Lamps," July 1964, and installed in accordance with that standard; or

(b) Four red signal lamps designed to conform to SAE Standard J887, "School Bus Red Signal Lamps," July 1964, and four amber signal lamps designed to conform to that standard, except for their color, and except that their candlepower shall be at least  $2\frac{1}{2}$  times that specified for red signal lamps. Both red and amber lamps shall be installed in accordance with SAE Standard J887, except that:

(i) Each amber signal lamp shall be located near each red signal lamp, at the same level, but closer to the vertical centerline of the bus; and

(ii) The system shall be wired so that the amber signal lamps are activated only by manual or foot operation, and if activated, are automatically deactivated and the red signal lamps automatically activated when the bus entrance door is opened.

**5.4.1.5** The color in all lighting equipment covered by this standard shall be in accordance with SAE Standard J578a, April 1965, "Color Specification for Electric Signal Lighting Devices."

## **S4.2. Other requirements.**

**S4.2.1** The words "it is recommended that," "recommendations," or "should be" appearing in any SAE Standard or Recommended Practice referenced or subreferenced in this standard shall be read as setting forth mandatory requirements, except that the aiming pads on the lens face and the black area surrounding the signal lamp, recommended in SAE Standard J887, "School Bus Red Signal Lamps," July 1964, are not required.

## **S4.3. Location of required equipment.**

**S4.3.1** Except as provided in S4.3.1.1 through S4.3.1.6, each lamp, reflective device, and item of associated equipment shall be securely mounted on a rigid part of the vehicle other than glazing that is not designed to be removed except for repair, in accordance with the requirements of Table I or III and in locations specified in Table II (multipurpose passenger vehicles, trucks, trailers, and buses 80 or more inches in overall width) or Table IV (all passenger cars, and motorcycles, and multipurpose passenger vehicles, trucks, trailers, and buses less than 80 inches in overall width), as applicable.

**S4.3.1.1.** [Except as provided in S4.3.1.1.1, each lamp and reflective device shall be located so that it meets the visibility requirements specified in any applicable SAE Standard or Recommended Practice. In addition, no part of the vehicle shall prevent a parking lamp, taillamp, stop lamp, turn signal lamp, or backup lamp from meeting its photometric output at any applicable group of test points specified in Figures 1 and 3, or prevent any other lamp from meeting the photometric output at any test point specified in any applicable SAE Standard or Recommended Practice. However, if motor vehicle equipment (e.g., mirrors, snow plows, wrecker booms, backhoes, and winches) prevents compliance with this paragraph by any required lamp or reflective device, an auxiliary lamp or device meeting the requirements of this paragraph shall be provided. (40 F.R. 54427—November 24, 1975. Effective: 11/24/75)]

[**S4.3.1.1.1** Clearance lamps may be mounted at a location other than on the front and rear if necessary to indicate the overall width of a

vehicle, or for protection from damage during normal operation of the vehicle, and at such a location they need not be visible at 45 degrees inboard. (40 F.R. 54427—November 24, 1975. Effective: 11/24/75)]

**S4.3.1.2** On a truck tractor, the red rear reflex reflectors may be mounted on the back of the cab, at a minimum height not less than 4 inches above the height of the rear tires.

**S4.3.1.3** On a trailer, the amber front side reflex reflectors and amber front side marker lamps may be located as far forward as practicable exclusive of the trailer tongue.

**S4.3.1.4** When the rear identification lamps are mounted at the extreme height of a vehicle, rear clearance lamps need not meet the requirement of Table II that they be located as close as practicable to the top of the vehicle.

**S4.3.1.5** The center of the lens referred to in SAE Standard J593c, "Backup Lamps," February 1968, is the optical center.

**S4.3.1.6** On a truck tractor, clearance lamps mounted on the cab may be located to indicate the width of the cab, rather than the overall width of the vehicle.

**S4.3.1.7** [The requirement that there be not less than 4 inches between a front turn signal lamp and a low-beam headlamp, specified in SAE Standard J588e, "Turn Signal Lamps," September 1970, shall not apply if the sum of the candlepower values of the turn signal lamp measured at the test points within each group listed in Figure 1 is not less than two and one-half times the sum specified for each group for yellow turn signal lamps. (41 F.R. 765—January 5, 1976. Effective: 1/5/76)]

## **S4.4. Equipment combinations.**

**S4.4.1** Two or more lamps, reflective devices, or items of associated equipment may be combined if the requirements for each lamp, reflective device, and item of associated equipment are met, except that no clearance lamp may be combined optically with any taillamp or identification lamp.

#### **S4.5. Special wiring requirements.**

**S4.5.1** Each vehicle shall have a means of switching between lower and upper headlamp beams that conforms to SAE Recommended Practice J564a, "Headlamp Beam Switching," April 1964, or to SAE Recommended Practice J565b, "Semi-Automatic Headlamp Beam Switching Devices," February 1969.

**S4.5.2** Each vehicle shall have a means for indicating to the driver when the upper beams of the headlamps are on that conforms to SAE Recommended Practice J564a, April 1964, except that the signal color need not be red.

**S4.5.3** The taillamps on each vehicle shall be activated when the headlamps are activated in a steady-burning state.

**S4.5.4** The stop lamps on each vehicle shall be activated upon application of the service brakes.

**S4.5.5** [The vehicular hazard warning signal operating unit on each vehicle shall operate independently of the ignition or equivalent switch, and when activated, shall cause to flash simultaneously sufficient turn signal lamps to meet, as a minimum, the turn signal lamp photometric requirements of this standard. (41 F.R. 765—January 5, 1976. Effective: 1/5/76)]

**S4.5.6** [Each vehicle equipped with a turn signal operating unit shall also have an illuminated pilot indicator. Failure of one or more turn signal lamps to operate shall be indicated in accordance with SAE Standard J588c, "Turn Signal Lamps," September 1970, except where a variable-load turn signal flasher is used on a truck, bus, or multipurpose passenger vehicle 80 or more inches in overall width, on a truck that is capable of accommodating a slide-in camper, or on any vehicle equipped to tow trailers. (41 F.R. 765—January 5, 1976. Effective: 1/5/1976)]

**S4.5.7** On all passenger cars, and motorcycles, and multipurpose passenger vehicles, trucks, and buses of less than 80 inches overall width:

(a) When the parking lamps are activated, the taillamps, license plate lamps, and side marker lamps shall also be activated; and

(b) When the headlamps are activated in a steady-burning state, the taillamps, parking

lamps, license plate lamps and side marker lamps shall also be activated.

#### **S4.6** When activated:

(a) Turn signal lamps, hazard warning signal lamps, and school bus warning lamps shall flash; and

(b) All other lamps shall be steady-burning, except that means may be provided to flash headlamps and side marker lamps for signaling purposes.

#### **[S4.7 Replacement Equipment**

**S4.7.1** Each lamp, reflective device, or item of associated equipment manufactured to replace any lamp, reflective device, or item of associated equipment on any vehicle to which this standard applies, shall be designed to conform with this standard.

**S4.7.2** Each lamp, reflective device, or item of associated equipment to which section S4.7.1 applies may be labeled with the symbol DOT, which shall constitute a certification that it conforms to applicable Federal motor vehicle safety standards. (37 F.R. 445—January 12, 1972. Effective: 1/12/72)]

#### **S5. Subreferenced SAE Standards and Recommended Practices.**

**S5.1** [SAE Standards and Recommended Practices subreferenced by the SAE Standards and Recommended Practices included in Tables I and III and paragraphs S4.1.4 and S4.5.1 are those published in the 1970 edition of the SAE Handbook, except that the SAE Standard referred to as "J599" is J599c, *Lighting Inspection Code*, March 1973, and the subreferenced SAE Standard referred to as "J575" is J575e, *Tests for Motor Vehicle Lighting Devices and Components*, August 1970, for tail lamps, stop lamps, and turn signal lamps designed to conform to SAE Standard J585d, J586c, and J588e respectively. (41 F.R. 1483—January 8, 1976. Effective: 1/8/76)]

**S5.2** [Requirements of SAE Standards incorporated by reference in this standard, other than J576b and J576c, do not include tests for warpage of devices with plastic lenses. (40 F.R. 25677—June 18, 1975. Effective: 6/18/75)]

### Interpretation

(1) The term "overall width" refers to the nominal design dimension of the widest part of the vehicle, exclusive of signal lamps, marker lamps, outside rearview mirrors, flexible fender extensions, and mud flaps, determined with doors and windows closed, and the wheels in the straight-ahead position.

(2) Paragraph S3.1 and Tables I and III of § 571.108 as amended (32 F.R. 18033, Dec. 16, 1967), specify that certain lamp assemblies shall conform to applicable SAE Standards. Each of these basically referenced standards subreferences both SAE Standard J575 (tests for motor vehicle lighting devices and components) which in turn references SAE Standard J573 on bulbs, and SAE Standard J567 on bulb sockets.

(3) Paragraph C of SAE Standard J575 states in part: "Where special bulbs are specified,

they should be submitted with the devices and the same or similar bulbs used in the tests and operated at their rated mean spherical candle-power." The Administrator has determined that this provision of SAE Standard J575 permits the use of special bulbs, including tubular-type bulbs, which do not conform to the detailed requirements of Table I of SAE Standard J573. It follows that the sockets for special bulbs need not conform to the detailed requirements of SAE Standard J567. These provisions for special bulbs in no way except the lamp assemblies from meeting all performance requirements specified in Federal Standard No. 108, including those specified in the basically referenced SAE Standards, and in the subreferenced SAE Standard J575.

**35 F.R. 16842**  
**October 31, 1970**

Effective: January 1, 1972  
 (Except as noted in the Rule)

TABLE I.—REQUIRED MOTOR VEHICLE LIGHTING EQUIPMENT  
 MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF 80 OR MORE INCHES  
 OVERALL WIDTH

Item Column 1	Multipurpose passenger vehicles, trucks and buses Column 2	Trailers Column 3	Applicable SAE standard or recommended practice Column 4
Headlamps.....	2 white, 7-inch, Type 2 headlamp units; or 2 white, 5¾-inch, Type 1 headlamp units and 2 white 5¾-inch, Type 2 headlamp units.	None.....	J580a, June 1966; J579a August 1965; and J566, January 1960.
Taillamps.....	2 red.....	2 red.....	J585d, August 1970.
Stoplamps.....	2 red <sup>1</sup> .....	2 red <sup>1</sup> .....	J586c, August 1970.
License plate lamp.....	1 white <sup>2</sup> .....	1 white <sup>2</sup> .....	J587d, March 1969.
Reflex reflectors.....	4 red; 2 amber <sup>6</sup> .....	4 red; 2 amber.....	J594c, March 1967.
Side marker lamps.....	2 red; 2 amber <sup>6</sup> .....	2 red; 2 amber.....	J592e, July 1972.
Backup lamp.....	1 white <sup>2</sup> .....	None.....	J593c, February 1968.
Turn signal lamps.....	2 red or amber; 2 Class A amber. <sup>3</sup>	2 red or amber.	J588e, September 1970.
Turn signal operating unit.	1.....	None.....	J589, April 1964.
Turn signal flasher.....	1 <sup>6</sup> .....	None.....	J590b, October 1965.
Vehicular hazard warning signal operating unit.	1.....	None.....	J910, January 1966.
Vehicular hazard warning signal flasher.	1 <sup>6</sup> .....	None.....	J945, February 1966.
Identification lamps.....	3 amber; 3 red <sup>6</sup> .....	3 red.....	J592e, July 1972.
Clearance lamps.....	2 amber; 2 red <sup>6</sup> .....	2 amber; 2 red.....	J592e, July 1972.
Intermediate side marker lamps.	2 amber <sup>4</sup> .....	2 amber <sup>4</sup> .....	J592e, July 1972.
Intermediate reflex reflectors.	2 amber <sup>4</sup> .....	2 amber <sup>4</sup> .....	J594d, March 1967.

<sup>1</sup> See S4.1.1.6.    <sup>2</sup> See S4.1.1.10.    <sup>3</sup> See S4.5.6.    <sup>4</sup> See S4.1.1.3.    <sup>5</sup> See S4.4.2.    <sup>6</sup> See S4.1.1.2.

【(41 F.R. 765 -January 5, 1976. Effective: 1/5/76)】

TABLE II.—LOCATION OF REQUIRED EQUIPMENT

MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF 80 OR MORE INCHES OVERALL WIDTH

Item Column 1	Location on—		Height above road surface measured from center of item on vehicle at curb weight Column 4
	Multipurpose passenger vehicles, trucks, and buses Column 2	Trailers Column 3	
Headlamps-----	Type 1 headlamps at the same height, 1 on each side of the vertical centerline; Type 2 headlamps at the same height, 1 on each side of the vertical centerline; as far apart as practicable.	Not required-----	Not less than 24 inches, nor more than 54 inches.
Taillamps-----	On the rear, 1 on each side of the vertical centerline, at the same height, and as far apart as practicable.	On the rear, 1 on each side of the vertical centerline, at the same height, and as far apart as practicable.	Not less than 15 inches, nor more than 72 inches.
Stoplamps-----	On the rear, 1 on each side of the vertical centerline, at the same height, and as far apart as practicable.	On the rear, 1 on each side of the vertical centerline, at the same height, and as far apart as practicable.	Not less than 15* inches, nor more than 72 inches.
License plate lamp.	At rear license plate, to illuminate the plate from the top or sides.	At rear license plate to illuminate the plate from the top or sides.	No requirement.
Backup lamp----	On the rear-----	Not required-----	No requirement.
Turn signal lamps.	At or near the front—1 amber on each side of the vertical centerline, at the same height, and as far apart as practicable. On the rear—1 red or amber on each side of the vertical centerline, at the same height, and as far apart as practicable.	On the rear—1 red or amber on each side of the vertical centerline, at the same height, and as far apart as practicable.	(Not less than 15 inches, nor more than 83 inches.)*
Identification lamps.	(On the front and rear—3 lamps, amber in front, red in rear, as close as practicable to the top of the vehicle, at the same height, as close as practicable to the vertical centerline, with lamp centers spaced not less than 6 inches or more than 12 inches apart.)*	(On the rear—3 lamps as close as practicable to the top of the vehicle at the same height, as close as practicable to the vertical centerline, with lamp centers spaced not less than 6 inches or more than 12 inches apart.)*	On the front only— No part of the lamp or mountings shall extend below the top of the vehicle's windshield.
Clearance lamps.	On the front and rear—2 amber lamps on front, 2 red lamps on rear, to indicate the overall width of the vehicle, one on each side of the vertical centerline, at the same height, and as near the top as practicable. <sup>2 4</sup>	On the front and rear—2 amber lamps on front, 2 red lamps on rear, to indicate the overall width of the vehicle, one on each side of the vertical centerline, at the same height, and as near the top thereof as practicable. <sup>4 5</sup>	No requirement.
Intermediate side marker lamps.	On each side—1 amber lamp located at or near the midpoint between the front and rear side marker lamps.	On each side—1 amber lamp located at or near the midpoint between the front and rear side marker lamps.	Not less than 15 inches.
Intermediate side reflex reflectors.	On each side—1 amber located at or near the midpoint between the front and rear side reflex reflectors.	On each side—1 amber located at or near the midpoint between the front and rear side reflex reflectors.	Not less than 15 inches nor more than 60 inches.
Reflex reflectors.	On the rear—1 red on each side of the vertical centerline, as far apart as practicable, and at the same height. <sup>3</sup> On each side—1 red as far to the rear as practicable, and 1 amber as far to the front as practicable.	On the rear—1 red on each side of the vertical centerline, as far apart as practicable, and at the same height. On each side—1 red as far to the rear as practicable, and 1 amber as far to the front as practicable.	Not less than 15 inches nor more than 60 inches.
Side marker lamps.	On each side—1 red as far to the rear as practicable, and 1 amber as far to the front as practicable.	On each side—1 red as far to the rear as practicable, and 1 amber as far to the front as practicable.	Not less than 15 inches.

<sup>1</sup> [Deleted]    <sup>2</sup> See S4.3.1.6.    <sup>3</sup> See S4.3.1.2.    <sup>4</sup> See S4.3.1.4.    <sup>5</sup> See S4.1.1.9.

\*(37 F.R. 1107—January 25, 1972. Effective: 1/25/72)

TABLE III.—REQUIRED MOTOR VEHICLE LIGHTING EQUIPMENT  
 ALL PASSENGER CARS AND MOTORCYCLES, AND MULTIPURPOSE PASSENGER VEHICLES, TRUCKS,  
 TRAILERS, AND BUSES, OF LESS THAN 80 INCHES OVERALL WIDTH

Item Column 1	Passenger cars, multi- purpose passenger vehi- cles, trucks, and buses Column 2	Trailers Column 3	Motorcycles Column 4	Applicable SAE standard or recom- mended practice Column 5
Headlamps.....	2 white, 7-inch, Type 2 headlamp units; or 2 white, 5 $\frac{3}{4}$ -inch, Type 1 headlamp units and 2 white, 5 $\frac{3}{4}$ -inch, Type 2 headlamp units.	-----	I white.....	J580a, June 1966, J579a, August 1965, and J566, January 1960.  J584, April 1964 and J566, January 1960.
Taillamps.....	2 red.....	2 red <sup>11</sup> .....	1 red.....	J585d, August 1970.
Stoplamps.....	2 red <sup>1 2</sup> .....	2 red <sup>1 11</sup> .....	1 red <sup>1</sup> .....	J586c, August 1970.
License plate lamp	1 white <sup>3</sup> .....	1 white <sup>3</sup> .....	1 white <sup>3</sup> .....	J587d, March 1969.
Parking lamps.....	2 amber or white <sup>4</sup> .....	None.....	None.....	J222, December 1970.
Reflex reflectors...	4 red, 2 amber <sup>5</sup> .....	4 red; 2 amber <sup>11 12</sup> ...	3 red; 2 amber.....	J594e, March 1967.
Intermediate side reflex reflectors.	2 amber <sup>9</sup> .....	2 amber <sup>9</sup> .....	None.....	J594d, March 1967.
Intermediate side marker lamps.	2 amber <sup>9</sup> .....	2 amber <sup>9</sup> .....	None.....	J592e, July 1972.
Side marker lamps	2 red, 2 amber <sup>5</sup> .....	2 red; 2 amber <sup>12</sup> .....	None.....	J592e, July 1972.
Backup lamp.....	1 white <sup>3</sup> .....	None.....	None.....	J593c, February 1968.
Turn signal lamps	2 red or amber; 2 amber. <sup>2 6</sup>	2 red or amber.	2 amber; 2 red or amber. <sup>7 12</sup>	J588e, September 1970.
Turn signal operating unit.	1 <sup>7 8 10</sup> .....	None.....	1 <sup>10</sup> .....	J589, April 1964.
Turn signal flasher.	1 <sup>6</sup> .....	None.....	1 <sup>12</sup> .....	J590b, October 1965.
Vehicular hazard warning signal operating unit.	1.....	None.....	None.....	J910, January 1966.
Vehicular hazard warning signal flasher.	1 <sup>6</sup> .....	None.....	None.....	J945, February 1966.

<sup>1</sup> See S4.1.1.6.    <sup>2</sup> See S4.1.1.7.    <sup>3</sup> See S4.1.1.10.    <sup>4</sup> See S4.1.1.11.    <sup>5</sup> See S4.1.1.2.    <sup>6</sup> See S4.4.2.  
<sup>7</sup> See S4.5.6.    <sup>8</sup> See S4.1.1.5.    <sup>9</sup> See S4.1.1.3.    <sup>10</sup> See S4.1.1.15.    <sup>11</sup> See S4.1.1.17.    <sup>12</sup> See S4.1.1.18.

【(41 F.R. 765—January 5, 1976. Effective: 1/5/76)】

TABLE IV.—LOCATION OF REQUIRED EQUIPMENT

ALL PASSENGER CARS AND MOTORCYCLES, AND MULTIPURPOSE PASSENGER VEHICLES, TRUCKS, TRAILERS, AND BUSES, OF LESS THAN 80 INCHES OVERALL WIDTH

Item Column 1	Location on		Height above road surface measured from center of item on vehicle at curb weight Column 4
	Passenger cars, multipurpose passenger vehicles, trucks, trailers, and buses Column 2	Motorcycles Column 3	
Headlamps-----	Type 1 headlamps at the same height, 1 on each side of the vertical centerline; Type 2 headlamps at the same height, 1 on each side of the vertical centerline; as far apart as practicable.	On the vertical centerline, except that if two are used, they shall be symmetrically disposed about the vertical centerline.	Not less than 24 inches, nor more than 54 inches.
Taillamps-----	On the rear—1 on each side of the vertical centerline, at the same height, and as far apart as practicable. <sup>2</sup>	On the rear—on the vertical centerline except that if two are used, they shall be symmetrically disposed about the vertical centerline.	Not less than 15 inches, nor more than 72 inches.
Stoplamps-----	On the rear—1 on each side of the vertical centerline, at the same height, and as far apart as practicable. <sup>2</sup>	On the rear—on the vertical centerline except that if two are used, they shall be symmetrically disposed about the vertical centerline.	Not less than 15 inches, nor more than 72 inches.
License plate lamp.	At rear license plate, to illuminate the plate from the top or sides.	At rear license plate-----	No requirement.
Parking lamps---	On the front—1 on each side of the vertical centerline, at the same height, and as far apart as practicable.	Not required-----	Not less than 15 inches, nor more than 72 inches.
Reflex reflectors.	On the rear—1 red on each side of the vertical centerline, at the same height, and as far apart as practicable. On each side—1 red as far to the rear as practicable and 1 amber as far to the front as practicable. <sup>2</sup>	On the rear—1 red on the vertical centerline except that, if two are used on the rear, they shall be symmetrically disposed about the vertical centerline. On each side—1 red as far to the rear as practicable, and 1 amber as far to the front as practicable.	Not less than 15 inches nor more than 60 inches.
Backup lamp-----	On the rear-----	Not required-----	No requirement.
Turn signal lamps. <sup>1</sup>	At or near the front—1 amber on each side of the vertical centerline, at the same height, and as far apart as practicable. On the rear—1 red or amber on each side of the vertical centerline, at the same height, and as far apart as practicable.	At or near the front—1 amber on each side of the vertical centerline at the same height, and having a minimum horizontal separation distance (centerline of lamps) of 16 inches. Minimum edge to edge separation distance between lamp and headlamp is 4 inches. At or near the rear—1 red or amber on each side of the vertical centerline, at the same height and having a minimum horizontal separation distance (centerline of lamps) of 9 inches. Minimum edge to edge separation distance between lamp and tail or stop lamp is 4 inches.	Not less than 15 inches, nor more than 83 inches.
Side marker lamps.	On each side—1 red as far to the rear as practicable, and 1 amber as far to the front as practicable.	Not required-----	Not less than 15 inches.
Intermediate side marker lamps.	On each side—1 amber located at or near the midpoint between the front and rear side marker lamps.	Not required-----	Not less than 15 inches.
Intermediate side marker reflectors.	On each side—1 amber located at or near the midpoint between the front and rear side marker reflectors.	Not required-----	Not less than 15 inches, nor more than 60 inches.

<sup>1</sup> Front turn signal lamps not required for trailers.

<sup>2</sup> See S4.1.1.18.



## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 109

### New Pneumatic Tires—Passenger Cars

(Docket No. 18)

A proposal to amend § 371.21 of Part 371, Initial Federal Motor Vehicle Safety Standards, by adding Standard No. 109, New Pneumatic Tires—Passenger Cars; and Standard No. 110, Tire Selection and Rims—Passenger Cars; was published in the *Federal Register* on July 22, 1967 (32 F.R. 10812).

Interested persons have been afforded an opportunity to participate in the making of the amendment.

Compliance with the labeling requirements of Standard No. 109, established in accordance with section 201 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1421), and the tread wear indicator requirements found in the standard may necessitate the modification of tire molds. Several tire manufacturers requested that additional time be allowed to modify these tire molds. After evaluation of all data received, it was determined that an effective date of August 1, 1968, for paragraphs S4.2.1 and S4.3 would provide a reasonable amount of time to accomplish the necessary mold modifications.

Many comments stated that no practical way is known to permanently affix a label onto the tire sidewall, as would have been required by proposed paragraph S4.3.1 until such time as a label is molded into or onto the tire. Accordingly, S4.3.1 of Standard No. 109 has been modified to permit, until August 1, 1968, the use of a label or tag containing the required labeling information not permanently molded into or onto the tire.

Many comments objected to the limitations imposed by the maximum tire section width dimensions specified in the tables of the notice. The Administrator has determined that additional dimensional latitude is necessary, and therefore Standard No. 109 specifies that to pro-

vide for tire growth, protective side ribs, ornamentation, manufacturing tolerances, and design differences for each tire size designation, actual tire section width and overall tire width may exceed the section width specified in Table I of the Standard by 7 percent.

In response to requests, additional tire size designations and load/inflation schedules were added when necessary information was available. In addition, Table I of Standard No. 109 and Table II of Standard No. 110 have been combined to collate related information.

Persons desiring an amendment to Standard No. 109 adding tires not presently listed, should submit sufficient pertinent information relative to these tires in 10 copies to the Secretary of Transportation; Attention: Motor Vehicle Safety Performance Service, National Highway Safety Bureau, Federal Highway Administration, U.S. Department of Transportation, Washington, D.C. 20591.

Data received have shown that the rim references indicated in the proposed Standards were inadequate in coverage. Therefore, a more comprehensive list of foreign and domestic trade association publications containing appropriate rim standards or practices has been referenced in the Standards.

Data received demonstrated that the bead unseating and tire strength requirements were inappropriate for certain groups of small tires. Accordingly, tires were regrouped and the test values revised to provide requirements for these small tires that are proportional to the requirements for other sizes of tires.

Although Standard No. 109 applies to tires for use on passenger cars manufactured after 1948, some of the tires covered by the Standard may also be used on earlier model vehicles.

The testing procedures set forth in the Standard, size designations, and related data are based upon existing standards or practices using information furnished by such organizations as the Society of Automotive Engineers, Federal Trade Commission, Tire and Rim Association, European Tire and Rim Technical Organization, Japanese Standards Association, Japan Automobile Tire Manufacturers Association, Rubber Manufacturers Association, Tyre Manufacturers Conference, Ltd., and the Society of Motor Manufacturers and Traders, Ltd.

To permit production of sufficient quantities of tires complying with the requirements of Standard No. 109 after its effective date of January 1, 1968, Standard No. 110 applies to passenger cars manufactured on or after April 1, 1968.

A single table of load/pressure values for radial ply tires was included in the notice and this was supported by many comments. Other comments stressed the importance of including different load/pressure values for optimum tire deflections. Although a single table of load/pressure schedules combining these values for these radial ply tires would be desirable, it was not considered advisable to include such a table in the standard promulgated under the present notice.

In accordance with section 201 of the Act, S4.3 of Standard No. 109 requires that each tire be labeled with the name of the manufacturer or his brand name and an approved code mark to permit the tire seller to identify the tire manufacturer upon the purchaser's request. Any tire manufacturer desiring an approved code mark should apply for his code number assignment to the Secretary of Transportation; Attention:

Motor Vehicle Safety Performance Service, National Highway Safety Bureau, Federal Highway Administration, U.S. Department of Transportation, Washington, D.C. 20591.

Several comments, including the suggested use of a "load range" system, will be considered for future rulemaking. (See 32 F.R. 14279).

Since it was clearly the intent of the Congress that, to enhance the safety of the general public, Federal Motor Vehicle Safety Standards for tires become effective as soon as practicable, and since no adverse comments were received pertinent to the proposed effective date presented in the advance notice of proposed rulemaking (32 F.R. 2417), at a Government-industry technical meeting, and in the notice of proposed rulemaking (32 F.R. 10812), and no undue burden was demonstrated, good cause is shown that an effective date earlier than 180 days after issuance is in the public interest.

In consideration of the foregoing, § 371.21 of Part 371, Initial Federal Motor Vehicle Safety Standards, is amended . . . Standard No. 109 becomes effective January 1, 1968, and Standard No. 110 becomes effective April 1, 1968.

(Secs 103, 119, National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407); delegation of authority of Mar. 31, 1967 (32 F.R. 5606), as amended Apr. 6, 1967 (32 F.R. 6495), July 27, 1967 (32 F.R. 11276), Oct. 11, 1967 (32 F.R. 14277), Nov. 8, 1967).

Issued in Washington, D.C., on November 8, 1967.

Lowell K. Bridwell,  
Federal Highway Administrator.

**32 F.R. 15792**  
**November 16, 1967**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109**  
**New Pneumatic Tires—Passenger Cars**  
**(Docket No. 18)**

Motor Vehicle Safety Standard No. 109 (32 F.R. 15792) specifies tire dimensions and laboratory test requirements for bead unseating resistance, strength, endurance, and high speed performance; defines tire load ratings; and specifies labeling requirements for new pneumatic tires for use on passenger cars manufactured after 1948.

Certain labeling requirements are set forth in S4.3, including, in paragraph (i), a requirement for an approved recital (or the symbol specified in Figure 1) that the tire conforms to applicable Federal Motor Vehicle Safety Standards. Figure 1 contains lettering detail dimensions for that symbol.

The Federal Highway Administration has determined that it is not necessary to specify the width and stroke of individual letters nor the space between letters if the overall length and height is specified, and that more latitude is needed in the depth and overall length requirements for this symbol. Therefore, Standard No. 109 is being amended by striking out the unneeded dimensions and by providing increased latitude for the letter depth and the overall length requirements.

Since this amendment provides an alternative means of compliance, relieves a restriction, and

imposes no additional burden on any person, notice and public procedure hereon are unnecessary and good cause is shown that an effective date earlier than 180 days after issuance is in the public interest and the amendment may be made effective less than 30 days after publication in the *Federal Register*.

In consideration of the foregoing, § 371.21 of Part 371, Initial Federal Motor Vehicle Safety Standards, Standard No. 109 is amended by deleting Figure 1 (32 F.R. 15794) and in its place inserting the following Figure 1.

(Secs. 103, 119, National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407); delegation of authority of Mar. 31, 1967 (32 F.R. 6506), as amended Apr. 6, 1967 (32 F.R. 6495), July 27, 1967 (32 F.R. 11276), Oct. 11, 1967 (32 F.R. 14277), and Nov. 8, 1967 (32 F.R. 15710))

This amendment becomes effective January 1, 1968.

Issued in Washington, D.C., on December 11, 1967.

Lowell K. Bridwell,  
Federal Highway Administrator.

**33 F.R. 17938**  
**December 15, 1967**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

### New Pneumatic Tires—Passenger Cars

#### (Docket No. 18R)

Motor Vehicle Safety Standard No. 109 (32 F.R. 15792), as amended (32 F.R. 17938), specifies tire dimensions and laboratory test requirements for bead unseating resistance, strength, endurance, and high speed performance; defines tire load ratings; and specifies labeling requirements for new pneumatic tires for use on passenger cars manufactured after 1948. Motor Vehicle Safety Standard No. 110 (32 F.R. 15798) specifies tire selection and rims requirements to prevent tire overloading.

Figures 2 and 3 of Standard No. 109 are drawings of the bead unseating test fixture used in performing the test specified in S5.2.

Section S5.4.2.3 specifies the 50 miles-per-hour test schedule for the tire endurance test.

Tables I-A through I-H list the various tire types and sizes with proper load and inflation values.

After review of Petitions for Reconsideration received under Docket No. 18R, the Administrator has determined that certain parts of Standard No. 109 require clarification, the tire tables need revision to include a number of new sizes and there is need for a table listing a new series of tires.

In addition, Standard No. 110 requires an additional table to list alternative rims for tire and rim combinations not presently covered by the standard.

Therefore, Standard No. 109 is being amended by—

(a) Revising Figures 2 and 3, which depict the bead unseating test fixture, by adding one additional dimension to Figure 2 and a centerline and tangent line to Figure 3;

(b) Specifying that the test required by S5.4.2.3 be conducted without pressure adjustment or other interruption;

(c) In table I-A through I-H

(1) Adding additional tire size designations;

(2) Adding footnotes permitting the use of the letter "H", "S", or "V";

(3) Correcting typographical errors;

(d) Adding Table I-J which lists a new series of low section height tires.

In addition, Standard No. 110 is being amended by—

(a) Revising paragraph S4.4.1 to include alternative rims, not presently listed in the references cited in the definition of Test Rim in S3 of Standard No. 109; and

(b) Adding a new table of approved alternative rims.

Since these amendments provide clarification and alternative means of compliance, relieve restrictions, and impose no additional burden on any person, notice and public procedure hereon are unnecessary. The Administrator finds, for good cause shown, that no preparatory period is needed to effect compliance and it is therefore in the public interest to make the amendments effective immediately.

In consideration of the foregoing, § 371.21 of Part 371, Federal Motor Vehicle Safety Standards, Standard No. 109 (32 F.R. 15792), as amended (32 F.R. 17938), and Standard No. 110 (32 F.R. 15798), are amended, effective April 11, 1968 . . . .

(Secs. 103, 119, National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407); delegation of authority of March 31, 1967 (32 F.R. 5606), as amended Nov. 8, 1967 (32 F.R. 15710)).

Issued in Washington, D.C., on April 11, 1968.

Lowell K. Bridwell,

Federal Highway Administrator.

**33 F.R. 5944**

**April 18, 1968**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

### New Pneumatic Tires--Passenger Cars

On September 11, 1968, the Federal Highway Administration published in the *Federal Register* amendments to Standard Nos. 109 and 110 (33 F.R. 12842). Omitted from publication as part of Appendix A of Standard No. 109 were Tables 1-A through 1-J. For the convenience of persons using the tables the preamble to the amendments published September 11, 1968, and the text of the amendments, as corrected by the addition of the omitted tables are published below. Additionally, Appendix A of Standard No. 110 has been changed to specify the information that should be submitted with requests for the addition of alternative rim sizes.

Federal Motor Vehicle Safety Standard No. 109 (32 F.R. 15792), as amended (32 F.R. 17938 and 33 F.R. 5944), specifies tire dimensions and laboratory test requirements for bead unseating resistance, strength, endurance and high speed performance; defines tire load ratings; and specifies labeling requirements for new pneumatic tires for use on passenger cars manufactured after 1948. Motor Vehicle Safety Standard No. 110 (32 F.R. 15798) as amended (33 F.R. 5949) specifies tire selection and rim requirements to prevent tire overloading.

Tables 1-A through 1-J of Standard No. 109 list various tire types and sizes with proper load and inflation values.

Standard No. 109 is being amended to designate Tables 1-A through 1-J as Appendix A of Standard No. 109.

In addition, Table 1-H is being amended by adding additional tire size designations.

Table I of Standard No. 110 is a list of alternative rims for tire and rim combinations that are not contained in any reference in § 3 of Standard No. 109.

Standard No. 110 is being amended to designate Table I as Appendix A of Standard No. 110.

In addition, the table is being amended by adding, as alternative rims for tire size 8.55x15, rim sizes 5½-JK, 5½-JJ, 5½-J; F70-14, rim size 7JJ; and G70-14, rim size 7JJ.

Additionally, guidelines by which persons requesting routine additions to Appendix A of Standard No. 109 and Appendix A of Standard No. 110, are set forth as introductory language to both appendices. The guidelines provide an abbreviated rule making procedure for adding tire sizes to Standard No. 109, whereby the addition becomes effective 30 days from date of publication in the *Federal Register* if no comments are received. If comments objecting to the amendment warrant, the Administration will provide for additional rule making pursuant to the Rule Making Procedures for Motor Vehicle Safety Standards (23 C.F.R. 216).

Since these amendments provide an alternative means of compliance, relieve restrictions, and impose no additional burdens on any person, notice and public procedure hereon are unnecessary and the Administrator finds, for good cause shown, that no preparatory period is needed to effect compliance and it is in the public interest to make the amendments effective immediately.

In consideration of the foregoing, Section 371.21 of Part 371, Federal Motor Vehicle Safety Standards, Standard No. 109 (32 F.R. 15792), as amended (32 F.R. 17938 and 33 F.R. 5944), and Standard No. 110 (32 F.R. 15798), as amended (33 F.R. 5949), are amended effective this date as set forth below.

These amendments are made under the authority of Sections 103 and 119 of the National

**Effective: September 27, 1968**

Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation from the Secretary of Transportation, Part I of the Regulations of the Office of the Secretary (49 C.F.R. § 1.4(c)).

Issued in Washington, D.C., on September 27, 1968.

John R. Jamieson, Deputy  
Federal Highway Administrator

**33 F.R. 14964**  
**October 5, 1968**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109****New Pneumatic Tires—Passenger Cars****(Docket No. 69-4; Notice No. 1)**

On October 5, 1968, the Federal Highway Administration published guidelines in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A of Standard No. 109 and the Appendix A of Standard No. 110. These guidelines provided an abbreviated rule-making procedure for adding tire sizes to Standard No. 109 and alternative rim sizes to Standard No. 110, whereby the addition becomes effective 30 days from date of publication in the *Federal Register* if no objections to the proposed additions are received. If comments objecting to the amendment warrant, rule making pursuant to the rule-making procedures for motor vehicle safety standards (49 CFR Part 353) will be followed.

The Rubber Manufacturers Association has petitioned for the addition of the C70-15 tire size designation to Table I-B and the F60-15 tire size designation as a new category of tire to be listed within the tables. The Firestone Tire & Rubber Company has petitioned for the addition of the E50C-16, F50C-16, and H50C-17 tire size designations as a new category of tires.

On the basis of the data submitted by the Rubber Manufacturers Association and the Firestone Tire & Rubber Company indicating compliance with the requirements of Federal Motor Vehicle Safety Standards Nos. 109 and 110 and other information submitted in accordance with the procedural guidelines set forth. Appendix A of Motor Vehicle Safety Standard No. 109 is being amended and Table I of Appendix A of Standard No. 110 is being amended.

In consideration of the foregoing, § 371.21 of Part 371 Federal Motor Vehicle Safety Standards, Appendix A of Standard No. 109 (33 F.R. 14964) and Appendix A of Standard No. 110 (33 F.R. 14969) are amended as set forth below effective 30 days from date of publication in the *Federal Register*.

These amendments are issued under the delegation of authority published October 5, 1968 (33 F.R. 14964) and sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation from the Secretary of Transportation, Part I of the Regulations of the Office of the Secretary (49 CFR 1.4(c)).

Issued on February 3, 1969.

H. M. Jacklin, Jr.  
Acting Director  
Motor Vehicle Safety  
Performance Service  
National Highway Safety Bureau

**Motor Vehicle Safety Standard No. 109**

(1) Table I-B of Appendix A is amended by inserting between the tire size designation L70-14 and D70-15 . . . new tire size C70-15 data.

(2) . . . Tables I-K and I-L are added to Appendix A listing new categories of tire size designations.

**34 F.R. 1908**  
**February 8, 1969**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

### New Pneumatic Tires—Passenger Cars

(Docket No. 69-3; Notice No. 1)

The Rubber Manufacturers Association has submitted a petition for rulemaking requesting amendments to Table I-A and Table I-B of Appendix A of Federal Motor Vehicle Safety Standard No. 109—New Pneumatic Tires—Passenger Cars.

The petition requests the following changes:

(1) In Table I-A for tire size designation 8.25-15 the minimum size factor be changed from 37.57 inches to 35.57 inches.

(2) In Table I-B for tire size designation D70-13 the minimum size factor be changed from 32.32 inches to 32.34 inches; for tire size designation D70-14 the minimum size factor be changed from 32.87 inches to 32.81 inches; for tire size designation F70-14 the minimum size factor be changed from 34.18 inches to 34.16 inches; for tire size designation G70-14 the minimum size factor be changed from 35.14 inches to 35.18 inches; for tire size designation J70-14 the minimum size factor be changed from 36.91 inches to 36.87 inches; for tire size designation L70-14 the minimum size factor be changed from 37.59 to 37.62 and the section width be changed from 9.80 inches to 9.75 inches; for tire size designation D70-15 the minimum size factor be changed from 33.34 inches to 33.37 inches and the section width be changed from 7.75 inches to 7.70 inches; for tire size designation E70-15 the minimum size factor be changed from 34.17 inches to 34.13 inches; for tire size designation F70-15 the minimum size factor be changed from 34.91 inches to 34.89 inches; for tire size designation G70-15 the minimum size factor be changed from 35.68 inches to 35.66 inches; for tire size designation H70-15 the minimum size factor be changed from 36.68 inches to 36.64 inches; for tire size designation J70-15 the minimum size factor be changed from 37.34 inches

to 37.36 inches; and for tire size designation K70-15 the minimum size factor be changed from 37.62 inches to 37.66 inches.

RMA states in its petition that the requested changes are either (1) corrections of typographical errors in material submitted earlier by the RMA, upon which the present tables found in Appendix A of Standard No. 109 are based; or (2) slight modifications that reflect the most recently calculated data.

The request changes are being made. However, should any comments be received from interested persons objecting to, and giving reasons why the changes should not be made, the amendment will be modified as considered appropriate.

Since, to the extent they are other than corrective, these amendments make only minor technical changes at the request of the affected industry, the Administrator finds that, for good cause, notice of public procedure thereon is impracticable and unnecessary. Interested persons may submit written data, views, or arguments relating to the amendments. Comments should identify the Docket (No. 69-3) and be submitted in an original and three copies to the National Highway Safety Bureau, Rules Docket, Room 512, Federal Highway Administration, Washington, D.C. 20591. All comments submitted will be available for examination by interested persons at the docket room.

In consideration of the foregoing, section 371.21 of Part 371 (formally section 255.21 of Part 255), Tables I-A and I-B of Appendix A of Federal Motor Vehicle Safety Standard No. 109 as amended (33 F.R. 19714) is amended effective March 15, 1969 . . . (Secs. 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966; (15 U.S.C. 1392, 1407); and the delegation of authority contained in § 1.4(c) of

Effective: March 15, 1969

Part I of the Regulations of the Office of the  
Secretary (49 CFR 1.4 (c)).

Issued in Washington, D.C. on February 10,  
1969.

John R. Jamieson, Deputy  
Federal Highway Administrator

**34 F.R. 2252**

**February 15, 1969**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109****New Pneumatic Tires—Passenger Cars****(Docket No. 71-6; Notice 1)**

On January 26, 1971, the National Highway Traffic Safety Administration (NHTSA) published in the *Federal Register* (36 F.R. 1196) a revision of Part 574, Tire Identification and Record Keeping (Docket No. 70-12; Notice No. 5) to become effective May 22, 1971. Part 574, as revised, provides that the DOT symbol, constituting the manufacturer's certification that the tire conforms with applicable motor vehicle safety standards, must be above, below, or to the left or right of the tire identification number. In addition, under this part the tire identification number must include, as the first grouping within the number, a two-symbol code assigned by the NHTSA that identifies the manufacturer of the tire. This notice amends Standard No. 109 of Part 571, in order to allow manufacturers, at their option, to convert to the new tire identification system before the May 22, 1971, effective date.

The requirements of Part 574 relating to the certification symbol and the manufacturer's code number will take the place of the requirements in Motor Vehicle Safety Standard No. 109, Part 571 of this chapter, that the tire manufacturers place the DOT symbol and an assigned three-digit code number (in the case of brand-name tires) on both sidewalls. Accordingly, a notice published January 26, 1971 (36 F.R. 1195), amends Standard No. 109, effective May 22, 1971, to reconcile the requirements of that standard with the requirements of the Tire Identification and Record Keeping Regulation.

The Administration has received requests that tires manufactured before May 22, 1971, the effective date of Part 574, that are marked as prescribed by that part, not be required to be labeled on both sidewalls with the DOT symbol and the manufacturer's three-digit code required by Standard No. 109.

The requests have been found reasonable. In order to avoid unnecessary costs and allow for a smoother transition to the new requirements, Standard No. 109 is by this notice amended to provide that tires manufactured from March 1, 1971 to May 22, 1971, shall either meet the requirements of § 574.5, or, on both sidewalls, contain the DOT symbol and the manufacturer's three-digit code number required by S4.3(d) and S4.3(i) of Standard No. 109. Thus, tires manufactured during this period may be marked according to the current system, the new one effective May 22, 1971, or both.

Because this amendment to Standard No. 109 relieves restrictions and imposes no additional burden on any person, it is found that notice and public procedure thereon are unnecessary and impracticable, and that, for good cause shown, an effective date earlier than 180 days after issuance is in the public interest.

Issued on February 26, 1971.

Douglas W. Toms,  
Acting Administrator

**36 F.R. 4290**  
**March 4, 1971**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

### New Pneumatic Tires—Passenger Cars

(Docket No. 69-12; Notice No. 2)

A proposal to amend Part 571 (formerly Part 371), Federal Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires—Passenger Cars" was published on July 11, 1969 (34 F.R. 11501), as a notice of proposed rule making to delete the exemption for deep-tread, winter-type tires contained in the high-speed requirements. Interested persons were invited to submit comments to this notice.

Federal Motor Vehicle Safety Standard No. 109 (49 CFR 571.21), as amended (33 F.R. 19711), specifies tire dimensions and laboratory test requirements for bead unseating resistance, strength, endurance and high-speed performance; defines tire load ratings; and specifies labeling requirements for new pneumatic tires for use on passenger cars manufactured after 1948.

Paragraph S5.5.4 of Standard No. 109 specifies that for the high-speed performance aspects of the standard, tires are to be tested at 75 m.p.h. for 30 minutes, 80 m.p.h. for 30 minutes, and (except for deep-tread, winter-type tires) 85 m.p.h. for 30 minutes.

Because, in actual practice, deep-tread, winter-type tires are often required to perform at the same rate of speed as other type passenger car tires it was considered in the public interest to amend S5.5.4 to require the same level of high-speed performance of deep-tread, winter-type tires as other type tires are required to meet.

Several comments, including comments from one association representing new tire manufacturing companies, stated that the deep-tread, winter-type tires had groove depths deeper than conventionally treaded tires and that shoulder

temperatures of the tires on the laboratory test wheel operating at 80 m.p.h. are comparable to actual highway speeds in excess of 100 m.p.h. These commentators also indicated that to comply with the proposed amendment, the tread depths and lug configurations for the deep-tread, winter-type tires would have to be redesigned. However, research conducted for the Bureau has indicated that all deep-tread, winter-type tires when properly designed and constructed will conform to the present high-speed requirements for conventionally treaded passenger car tires. In addition, test wheel data submitted show that although the temperature of the crown of the tire of deep-tread, winter-type tires may run higher during the high-speed wheel test the difference in shoulder temperature appears insignificant.

Since deep-tread, winter-type tires must often perform at the same motor vehicle speeds and driving conditions as conventionally treaded tires, it is in the public interest that they meet the same minimum performance levels.

In consideration of the above, Federal Motor Vehicle Safety Standard No. 109 paragraph S5.5.4 is amended . . .

This amendment becomes effective January 1, 1971.

Issued on July 8, 1970.

Douglas W. Toms,  
Director,  
National Highway Safety Bureau

35 F.R. 11241  
July 14, 1970



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109****New Pneumatic Tires—Passenger Cars****(Docket No. 70-2; Notice No. 2)**

A proposal to amend Federal Motor Vehicle Safety Standard 109, New Pneumatic Tires—Passenger Cars, 49 CFR Part 571, was published on April 22, 1970 (35 F.R. 6440). The purpose of the proposed rule was to prevent the sale of tires that failed to pass the passenger car tire standard Motor Vehicle Safety (Standard No. 109) but were nevertheless being sold for passenger car use. As indicated in the notice of the proposed rule, Bureau investigations disclose that this has been a widespread practice. The use of such tires on passenger cars is considered a safety hazard.

In spite of the notice and press releases on the subject, the Bureau has found that unscrupulous distributors and dealers are continuing to buff off restrictive labeling on the tires and are selling them to unsuspecting members of the public. This amendment is therefore necessary to control the relatively large number of tires being reclassified and to provide a better means of enforcing the regulation against persons who are selling these tires for passenger car use.

The amendment changes the passenger car tire standard to require tires that are not certified by the manufacturer as complying with the passenger car tire standard to be branded with the phrase "Unsafe for Highway Use" and to have a label attached indicating that sale of the tire for passenger car use subjects the person selling the tire to a \$1,000 civil penalty. The amendment also requires tire manufacturers to report to the Bureau periodically on the number of these tires sold and the names of distributors or dealers to whom they are sold.

Interested persons have been offered an opportunity to participate in the making of this amendment. It was almost unanimously agreed that

there should be some restrictions placed on tires that had not been certified as complying with Standard No. 109. Several comments to the notice objected, however, to the requirement that the phrase "Unsafe for Normal Highway Use" be on the tire, on the ground that the word "Normal" was ambiguous. This designation has been found to have merit, and the word "Normal" has been omitted from the required phrase.

The requirement that the phrase be superimposed upon the manufacturer's name, or brand name, with lettering three-quarters of an inch high was objected to because the phrase would not be legible and could be easily removed. To avoid these problems, the requirement has been changed to provide that the phrase "Unsafe for Highway Use" be placed between the maximum section width and the tread and the height of the lettering reduced to one-half inch.

The proposal that the lettering of the term signifying the tire was unsafe for highway use be one-sixteenth of an inch deep was objected to because some tire casings have less than one-sixteenth of an inch of rubber on the outside of the sidewall and the alternative of one-half the thickness of the rubber covering the outside ply was not meaningful because the thickness could not always be determined. However, it is essential that the lettering be deep enough so that any attempt to buff it off will be easily recognizable and, therefore, the requirement that the lettering be one-sixteenth of an inch deep is being maintained. The change from the proposal to allow the lettering to be located anywhere between the maximum section width and the tread will allow the manufacturer to select a location where the rubber thickness is sufficient to impress lettering one-sixteenth of an inch.

Some comments suggested that the words "tube" or "tubeless" be required on the tire, even though the tire would not be used for passenger cars. This suggestion has been adopted in the final rule.

The requirement that the maximum inflation pressure and the maximum load rating be on the tire was omitted because they pertain to tires manufactured for passenger car use, not tires for off-road usage.

Some comments objected to the requirement that manufacturers report the quantity and serial numbers of reclassified tires sold and the names of distributors and dealers who purchase them. It was argued that keeping track of serial numbers, and distributors or dealers the tires were sold to would be burdensome and serve no safety related purpose. The Bureau feels that reporting of reclassified tires that are unsafe for highway use will provide the necessary control over these reclassified tires to assure that the tires will not be sold for passenger car use. Therefore, the reporting requirements have been maintained.

In consideration of the foregoing, Title 49—Transportation, Chapter V—National Highway Safety Bureau, Department of Transportation, Subchapter A—Motor Vehicle Safety Regulations, Part 571—Federal Motor Vehicle Safety Standard No. 109, New Pneumatic Tires—Passenger Cars is amended.

Effective date: December 1, 1970.

Since this amendment is designed to prevent a practice which can endanger the lives and property of the general public and because no comments were received objecting to the proposed effective date of December 1, 1970, in the notice of proposed rulemaking, good cause is shown that an effective date earlier than 180 days after issuance is in the public interest.

Issued on October 22, 1970.

Douglas W. Toms,  
Director

35 F.R. 16734  
October 29, 1970

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

### New Pneumatic Tires—Passenger Cars

(Docket No. 71-4; Notice No. 1)

Federal Motor Vehicle Safety Standard No. 109, 49 CFR Part 571, as amended (35 F.R. 16735), specifies requirements for passenger car tire dimensions and laboratory test requirements, defines tire load ratings, specifies labeling requirements and sets forth the limited conditions under which passenger car tires that are not certified as complying with the standard may be sold. One of the labeling requirements of the standard (S4.3(d)) is that each tire be labeled on both sidewalls with the manufacturer's name or, if the tire is a brand name tire, with the brand name and an approved code mark assigned the manufacturer by the National Highway Traffic Safety Administration (formerly the National Highway Safety Bureau). Another labeling requirement (S4.3(i)) in the standard is that each tire contain on both sidewalls a certification statement or the symbol DOT, constituting the manufacturer's certification that the tire conforms to the standard. Both of these requirements are affected by the Tire Identification and Recordkeeping Regulation (49 CFR Part 574), as revised and published in this issue of the *Federal Register* (36 F.R. 1196), in that the Tire Identification and Recordkeeping Regulation specifies the location of the DOT symbol and requires that it be on either sidewall of the tire. Part 574 also establishes a system whereby all tire manufacturers apply for an assigned two-symbol code designation which is to be part of the tire identification number and placed on either sidewall. It is intended that these requirements take the place of the requirements in Standard No. 109 that tire manufacturers be assigned a three-number code and that it be placed on both sidewalls of brand name tires.

In view of the above, S4.3 of the passenger car tire standard is amended as set forth below to reconcile the requirements of Standard No. 109 with the requirements of the Tire Identification and Recordkeeping Regulation.

In addition, the labeling requirements (S4.3) are changed as set forth below to make it clear that each tire shall be labeled with only one size designation found in the tables in Appendix A of Standard No. 109, except that tires may have equivalent inch and metric size designations. The labeling requirements are further changed by deleting the paragraph which deals with tires manufactured before August 1, 1968, since the exception is no longer relevant.

Requirements for reclassified tires (S6.) are being amended to provide that the serial number required by S6.1(c), and the manufacturer's code symbol, if used, can be on either sidewall.

It is further noted that the correction published in the *Federal Register* of November 26, 1970 (35 F.R. 18118), was inaccurately stated as "for the period covering November 1, 1970 through July 31, 1971". Actually, the phrase to be corrected was "for the period covering December 1, 1970 through July 31, 1971." S6.2 should read "for the period covering December 1, 1970 through June 30, 1971", and for clarity S6.2 is republished with the correct language.

In consideration of the foregoing, Standard No. 109 of § 571.21 of Title 49, Code of Federal Regulations, is amended.

Effective date: May 22, 1971.

Effective May 22, 1971

Because this amendment to Standard No. 109 relieves restrictions, clarifies the intent expressed in the standard, makes a correction to the standard and imposes no additional burden on any person, notice and request for comments on such notice are found to be unnecessary and impracticable, and good cause is shown that an effective date earlier than 180 days after issuance is in the public interest.

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Issued on January 19, 1971.

Douglas W. Toris,  
Acting Administrator, National  
Highway Traffic Safety Ad-  
ministration

36 F.R. 1195  
January 26, 1971

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109****Reclassified Tires****(Docket No. 70-2; Notice 4)**

The purpose of this notice is to amend Motor Vehicle Safety Standard No. 109, to prohibit the manufacture and sale of passenger car tires that do not meet the performance requirements of the standard. Such tires are presently allowed to be sold as "reclassified tires." A notice proposing this action was published on November 27, 1971 (36 F.R. 22688).

Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires," was amended October 29, 1970 (35 F.R. 16743), to allow passenger car tires which manufacturers did not certify as conforming to the performance tests of the standard, to be sold for off-highway purposes. The amendment required such tires to be labeled so that purchasers would be aware that they were considered unsafe for highway use. Moreover, manufacturers of such tires were required to report semi-annually to the NHTSA the number of tires sold. The purpose of the requirement was to allow the sale of such tires for off-highway purposes where a legitimate market existed for low-priced inexpensive tires, and where the fact that they failed to meet Federal performance tests would not pose a threat to users. Despite the conditions imposed by this amendment, the NHTSA continued to receive reports that significant numbers of these tires were being sold by unscrupulous dealers for passenger car, on-highway use.

Based upon its investigative efforts, and the material submitted to the docket in response to the notice of November 27, 1971, the NHTSA has determined that the continued sale of these tires should be prohibited, and that the substance of the rule proposed on November 27, 1971, should be implemented. Data which the NHTSA receives from manufacturers show an annual

production of these tires in the neighborhood of 200,000 units. The NHTSA has concluded that it cannot by enforcement measures alone prevent a significant number of these tires from being sold as "reclassified tires" for use on motor vehicles.

As indicated in the preamble to the notice of November 27, the tire industry manufactures tires designed specifically for off-road applications which are not greatly more expensive than most reclassified tires. The dangers that may result from vehicles equipped with substandard tires far outweigh, in the opinion of NHTSA, the economic benefits obtainable from allowing these tires to be sold for off-road purposes.

Certain issues raised by the comments to the notice of proposed rulemaking have been determined to be of merit, and they are incorporated into this amendment. The comments pointed out that the reference to all tires of the type and size designation found in the appendix of Standard No. 109 included tires other than passenger car tires, namely, certain tires manufactured for agricultural purposes that are not required to conform to Standard No. 109. As issued, this amendment applies only to those tires of a type and size designation appearing in the appendix of Standard No. 109 that are designed for use on passenger cars.

The comments also pointed out that prohibiting the sale of these tires as of the amendment's effective date would penalize many dealers who may have large stocks of such tires on hand. It was not the NHTSA's intention to penalize dealers, who in good faith have purchased such tires for sale as "reclassified tires" under existing regulations, but rather to prevent the further reclassification of tires by manufacturers, and to

require them to dispose of such tires in a way that their use as motor vehicle equipment will be impossible. This amendment, therefore, applies to tires manufactured (not sold) after its effective date and prohibits, after that date, the further reclassification of tires and their sale by manufacturers. "Reclassified tires" presently on dealer's shelves may continue to be distributed and sold in accordance with the existing provisions (S6.) of Standard No. 109 dealing with reclassified tires until supplies are exhausted.

The comments further pointed out that the language of the notice that prohibited the sale of these tires "for any purpose" would not allow them to be sold even for scrap materials. The comments indicated that advantageous uses for scrap tires are presently being developed. The NHTSA has no reason to prevent the sale of these tires if their use as motor vehicle equipment is impossible, and the amendment allows their sale as scrap materials.

In light of the above, Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires," appearing at 49 CFR 571.109, is amended . . . .

*Effective date:* October 1, 1972. The purpose of this amendment is to prevent a practice which is in violation of existing regulations, and whose continuance poses a threat to all users of the highways. Accordingly, it is hereby found that good cause exists for an effective date less than 180 days from the day of issuance.

This notice is issued under the authority of sections 103, 112, 119, and 201 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1401, 1407, 1421) and the delegation of authority at 49 CFR 1.51.

Issued on August 11, 1972.

Douglas W. Toms  
Administrator

37 F.R. 16604  
August 17, 1972

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

### New Pneumatic Tires—Passenger Cars

(Docket No. 71-23; Notice No. 2)

The purpose of this notice is to amend Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires", to require safety labeling information to be placed on the tire between the maximum section width and the bead, in order that this information can be retained on the casing if the tire is retreaded. A notice of proposed rulemaking regarding this subject was issued on December 21, 1971 (36 F.R. 24824).

A majority of the comments received in response to the notice agreed with the intent of the proposed amendment. However, objections were raised to the proposed requirement that the labeling information be located between the maximum section width and the bead on both sidewalls. The comments indicated that the use of white-wall designs limited the area between the section width and the bead, and that as a consequence, certain labeling information is placed between the maximum section width and the shoulder area to comply with the labeling requirements of Standard No. 109. Placing the information between maximum section width and bead on both sidewalls would evidently require the re-designing both of molds and lines of tires.

The agency has concluded after review of the information submitted to the docket that all

labeling information should be located on both sidewalls of the tires as presently required by Standard No. 109. However, in response to the objections to the proposed requirements, only one sidewall is required to have the labeling information between the maximum section width and the bead. This will still allow information to be retained on casings so that retreaders need not relabel tires in meeting the requirements of Standard No. 117 (49 CFR 571.117).

In light of the above, Paragraph S4.3 of Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires", § 571.109 of Title 49, Code of Federal Regulations, is amended . . .

*Effective Date:* July 1, 1973.

This notice is issued under the authority of sections 103, 112, 113, 114, 119 and 201 of the National Traffic and Motor Vehicle Safety Act, 15 USC 1392, 1401, 1402, 1403, 1407, 1421, and the delegation of authority at 49 CFR 1.51.

Issued on October 31, 1972.

Charles H. Hartman  
Acting Administrator

**37 F.R. 23536**  
**November 4, 1972**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109****New Pneumatic Tires—Passenger Cars****(Docket No. 71-23; Notice 3)****(Docket No. 1-8; Notice 10)**

This notice amends Motor Vehicle Safety Standards Nos. 109 and 117 (49 CFR 571.109) to reduce the minimum size of permanent safety labeling to 0.078 inches. Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires," was amended November 4, 1972 (37 F.R. 23536), to specify both a location on the tire sidewall for safety labeling and a labeling size of not less than  $\frac{3}{32}$  of an inch. Motor Vehicle Safety Standard No. 117, "Retreaded Pneumatic Tires", was amended March 23, 1972 (37 F.R. 9590), to specify permanent labeling of the same minimum size.

The Michelin Tire Company has protested that the  $\frac{3}{32}$  inch minimum size is inconsistent with the existing practice of European tire manufacturers of labeling tires in letters having a size of 0.078 inches (2mm). It has pointed out that as a consequence of the amendment, European tire manufacturers will have to increase the size of all existing labeling. The NHTSA has concluded that the difference between letters 0.078 inches in size and those of 0.093 inches is not significant, and does not justify the resultant expense to manufacturers of modifying tire molds. By this notice the NHTSA therefore reduces the minimum size to 0.078 inches for labeling required by S4.3 of Standard No. 109.

Because the permanent labeling provisions of Standard No. 117 are intended to be ultimately met with new tire labeling, the size requirements for permanent labeling in that standard are also modified.

In light of the above, Motor Vehicle Safety Standard No. 109, 49 CFR 571.109, and Motor Vehicle Safety Standard No. 117, 49 CFR 571.117, are amended as follows:

Effective dates: July 1, 1973, for the amendment to S4.3 of 49 CFR 571.109; February 1, 1974, for the amendment to S6.3.2 of 49 CFR 571.117. These amendments relieve an unnecessary restriction without a significant effect on motor vehicle safety. Consequently, it is found for good cause that notice and public procedure thereon are unnecessary, and that an effective date less than 180 days from the day of issuance is in the public interest.

(Secs. 103, 112, 113, 114, 119, 201, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421; delegations of authority at 49 CFR 1.51.)

Issued on March 8, 1973.

James E. Wilson  
Acting Administrator  
**38 F.R. 6999**  
**March 15, 1973**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109****New Pneumatic Tires—Passenger Cars****(Docket No. 71-10; Notice 3)**

This notice amends the requirements for high speed performance and endurance applicable to passenger car tires in Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires", by adding additional criteria to the description of tire failure. A notice of proposed rulemaking on which this amendment is based was published September 20, 1972 (37 F.R. 19381). That notice proposed to modify the criteria for tire failure in both Standard No. 109 and Standard No. 117, "Retreaded Pneumatic Tires". As the tests for high speed performance and endurance have been revoked in Standard No. 117, this amendment affects only the requirements of Standard No. 109.

The proposal of September 20, 1972, was designed to expand the description of tire failure to include certain characteristics which had appeared in tires tested by NHTSA, and which were considered to be evidence of potential in-service tire failure, but which were not specifically prohibited by the existing language of the standard. These conditions included tread-groove cracking, deep sidewall separations, and damage to areas such as the tire innerliner. Standard No. 109 presently prohibits tires tested to the high speed performance and endurance tests of the standard from exhibiting "tread, ply, cord, or bead separation, chunking, or broken cords". The proposal would have prohibited, as a result of either of the two tests, the displacement of any tire component from its design position, including partial or complete separation of any component from any other component, but would not have prohibited exposure of chafer fabric and surface cracking that did not expose ply cord or belt cord. Any crack in a tread groove that exceeded three-sixteenths of an inch

in length would, however, have also been prohibited. The proposal also contained an "air-loss" test, which would have required the tire to retain at least 95 percent of its initial inflation pressure when measured immediately after each performance test.

Numerous comments were received in response to the proposal. While most were in agreement with its general purpose, to provide a more inclusive definition of tire failure, almost all disagreed with the method proposed. The principal objection, raised by the Rubber Manufacturers' Association and major tire companies, was that the proposed language was too broad: that it included within the concept of tire failure many conditions that were in no way detrimental to tire performance. It was pointed out that many such conditions might exist in tires before laboratory wheel tests had been conducted and were considered by industry to be no more than inconsequential manufacturing imperfections. The comments argued that such conditions included cracking at an innerliner splice, innerliner blisters, innerliner folds, mold off-register, sidewall blisters, light tread, tearing or chipping of tread element, cord impression in the bead area, light bead, and bead cracks at the toe. The comments suggested as an alternative to the proposed language that the requirements be revised to specifically include the problem conditions that NHTSA testing had produced, and provided possible definitions to describe these conditions.

The NHTSA has determined that this suggested approach will satisfy the purpose of the proposal, and adopts it essentially as suggested by the domestic tire industry. Prohibitions against sidewall and innerliner separation, cracking, and open splices will be added to

the standard. New definitions, for "innerliner" and "innerliner separation", "cracking", "open splice", and "sidewall separation" are added to the standard. These definitions are essentially as suggested by the Rubber Manufacturers' Association, with the exception of "innerliner separation". The suggested definition would have limited tire failures involving innerliner separation to those demonstrating air loss. The NHTSA has not adopted this air-loss restriction for the following reasons. First, the NHTSA is of the opinion that innerliner separation exhibited on a "hot tire", one having just completed either of the laboratory wheel tests, is evidence of potential in-service tire failure, irrespective of whether actual air loss has occurred at that point. Second, the air-loss test adopted for the standard, and discussed in greater detail below, measures only a gross, or substantial air loss occurring during the test, and not the type of lesser air-loss that might result from an innerliner separation.

The standard is presently silent with respect to the method for determining whether the prohibited tire conditions exist. Several comments proposed that the failure modes be determined "visually". One comment suggested that touch, or X-rays, be specified. As amended, the standard specifies that prohibited conditions will, consistently with the larger body of opinion, be determined visually. This method is that used by NHTSA in past testing, and it has proven satisfactory. It is specifically included in the standard for purposes of clarification, but is not intended to preclude the use of simple hand magnification.

The standard is likewise silent on the issue of a given tire's condition before the running of the two laboratory wheel tests. The position taken by NHTSA in its enforcement of this standard up to now is that the specified laboratory tests are not required to be performed in order for a tire to be considered a failure, when the tire evidences any of the prohibited conditions before it is subjected to either test. The Rubber Manufacturers' Association submission to this docket implicitly reflects this point of view. The substance of that submission was that the proposed language would have categorized as failures certain conditions which appear in

untested, newly manufactured tires. The NHTSA is specifically amending Standard No. 109 in this issuance to reflect past agency interpretation and enforcement practice, by adding to the general requirements language prohibiting any tire before test from exhibiting those characteristics prohibited after either of the laboratory wheel tests.

One comment requested that a minor loss of tread resulting from the micro-siping process should not be considered a failure, despite the fact that this condition arguably comes within the prohibitory language. The position of the NHTSA is that micro-siping should be treated similarly to any other manufacturing process. Consequently, the removal of very small tread section during micro-siping, which is part of the manufacturing process, will not be considered a nonconformity. However, where the chunking of tread occurs as a result of the specified laboratory wheel tests, it will be considered a failure regardless of its amount.

One comment argued that the proposed test procedure, calling for a test rim that undergoes no permanent deformation, was not reflective of actual conditions. It argued that such a rim would have to be of massive construction, and suggested alternatively the continued use of existing test rims. The comment misunderstands the purpose of the procedure. The condition precluding any permanent deformation of the rim is intended only to ensure, together with the other language regarding air loss, that any air leaks will result necessarily from the tire, and not the test device. In other words, the provision is inserted to ensure that the tire will not be "blamed" for any air loss due to rim deformation. The condition that the rim undergo no permanent deformation is not intended to require the manufacture of a new genre of test rims; in practice, test rims currently in use do not deform significantly during the laboratory wheel test procedures, and the amended regulation will not prevent their continued use.

Many comments objected to the proposed air loss test, requiring the tire to have at least 95 percent of its original cold inflation pressure when tested immediately after both the high speed and endurance tests. The comments argued that conducting an air-pressure reading imme-

diately after the running of the tests was potentially hazardous to persons conducting the test. In addition, certain comments argued that the 95 percent air-retention requirement was inadequate, in that the test called for the measurement to be made on a "hot" tire, and the pressure would be significantly less if the tire were first allowed to cool.

The NHTSA has retained in the amendment both an air-loss test, and the requirements that the measurement be made, as proposed, immediately after both the high speed and endurance tests are completed. The NHTSA believes that inspection of the tire to determine if any prohibited conditions exist should be made when the tire is still at the higher temperatures created during the laboratory tests. As tires do increase in temperature during actual use, the inspection of tested tires at higher temperatures provides a more realistic environment for the discovery of conditions that can result in failure. Thus, it becomes mandatory to conduct the air-loss test immediately after the tire has been subjected to the laboratory wheel tests in order that the inside of the tire can be examined for failure modes while the tire is still at higher temperatures.

The NHTSA does not consider an objection to a test requirement on the basis that it may present a hazard to testing personnel to have merit. Test laboratories are places where products are subjected to extreme, often destructive, processes under controlled conditions by trained technicians using whatever equipment and safeguards are necessary, in order to assure the safety of the public that must use those products under uncontrolled conditions without comparable training or safeguards. The NHTSA is not indifferent to the safety of test technicians. On the contrary, it urges those in charge of test laboratories to take all necessary steps to assure the safety and health of their employees. But if a particular method of running a regulatory test such as the one in question here is found hazardous to test personnel, the proper remedy is not to change the regulation, but to devise methods and

equipment to perform the test process safely. The NHTSA is confident that modern technology and the testing profession are equal to the task.

The argument that the proposed test allowed a significant air loss to occur is meritorious. The NHTSA has modified the proposal by restricting the allowable air-loss to not less than the tire's inflation pressure at the beginning of the tests. Admittedly, this modification is not fully responsive to the comments, for this requirement permits as well a rather significant air loss. However, the air-loss test is designed to prevent only gross, exaggerated air-loss, and not instances of slow air leaks. Moreover, while tire inflation pressure will increase under test, it appears that the amount of increase may vary greatly from test to test. Variables such as tire expansion may also affect any increase in inflation pressure. Consequently, it is difficult to establish a value, in excess of the original pressure, that can accurately indicate a condition of air loss. The NHTSA has determined, therefore, to require only that the tire, when hot, have at least its initial cold inflation pressure. This lowers the amount of permissible air loss from that proposed, prohibits the exaggerated air loss which is NHTSA's primary concern, and still takes into account the variations in inflation pressure increase that may occur.

In light of the above, Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires," appearing at 49 CFR § 571.109, is amended. . . .

Effective date: March 29, 1974.

(Sections 103, 119, 201, and 202 Public Law 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421, and 1422; delegation of authority at 49 CFR 1.51.)

Issued on September 24, 1973.

James B. Gregory  
Administrator

**38 F.R. 27050**  
**September 28, 1973**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109****New Pneumatic Tires—Passenger Cars**

(Docket No. 71-10; Notice 5)

This notice responds to petitions for reconsideration received in response to the notice, published September 28, 1973 (38 F.R. 27050), revising the performance requirements of Motor Vehicle Safety Standard No. 109 (49 CFR 571.109). That notice modified the criteria for tire failure when tires are subjected to the high speed performance and endurance tests of the standard.

Timely petitions for reconsideration were received from five parties: The Firestone Tire and Rubber Company, Rubber Manufacturers' Association, Uniroyal Tire Company, B. F. Goodrich Tire Company, and the General Tire and Rubber Company. The petitions requested the agency to reconsider the definition of "innerliner separation" and the requirement that the tire be removed from the test wheel for inspection immediately after the prescribed tests are completed.

The petitions have argued that the definition of "innerliner separation" (a "parting of the innerliner from the carcass") is inconsistent with the definition of "carcass" ("the tire structure, except tread and sidewall rubber"), for the former unlike the latter creates the inference that the innerliner is not part of the carcass. One petitioner (B. F. Goodrich) argued that innerliner should not be considered part of the carcass and would redefine carcass to so specify. The NHTSA agrees with the comments which argue that the definition of "innerliner separation" should reflect that the innerliner is part of the carcass. That definition is accordingly modified as recommended by the petitions to mean a separation of the innerliner from the cord material of the carcass. The NHTSA believes no ascertainable benefit would be achieved by further

distinctions within the definition of "carcass." The requirement prohibiting the separation of the innerliner from the carcass cord material is the same whether or not the definition of "carcass" is further refined.

The petitions also state that innerliner is frequently composed of more than one layer of material. The definition of innerliner is revised to take this into account. However a separation of one innerliner layer from another does not constitute "innerliner separation" under the standard. That term means only a separation of the innerliner from the carcass cord material. The requirements specify that "visual evidence" of enumerated conditions will constitute a failure to the standard. The NHTSA believes the visual test, which has been consistently used in the past, to be satisfactory. However, in the case of innerliner separation, the visual evidence may not reflect an actual separation of the cord material from the innerliner. In such cases the standard is not intended to preclude a more detailed examination of the condition, including a cutting of the tire. This procedure has been afforded to manufacturers in past NHTSA enforcement efforts, and is considered consistent with the revised requirements.

The petitions also requested modification of the requirement that each tested tire be removed from the test wheel for inspection immediately after its testing is completed. The petitions argue that rapid deflation of a hot tire can cause innerliner separation. While several petitions recommended that the tire be allowed to cool to ambient temperature, Uniroyal has indicated that a one-hour period had been found sufficient to eliminate the chance that artificially caused separations will occur. The NHTSA agrees with the comment from Uniroyal that a one-hour

period is adequate for the tire to cool and has amended the standard accordingly.

The Rubber Manufacturers' Association has argued that minor nicks and tears in the tread which would not grow in size during service might be improperly considered "chunking" under the standard. RMA alludes to the discussion of the micro-siping process in the preamble to the notice of September 28, 1974, claiming it recognizes that small pieces of the tread can be broken away which do not affect performance. The standard is clear that chunking in a new tire before testing will be considered a failure. A minor tear in the tread does not appear to involve a removal of rubber from the tire, and is not within the definition of chunking. Whether a "nick" in the tread represents chunking would necessarily be based on its size. As in micro-siping, minor tread loss resulting from the manufacturing process that is evident before test does not constitute a failure. Any loss resulting from the laboratory wheel test is a failure.

In light of the above, Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires," appearing at 49 CFR 571.109, is amended. . . .

Effective date: March 29, 1974. This amendment modifies slightly amendments whose effective date was originally established as the above date on September 28, 1973. As these amendments relieve restrictions, provide clarification, and impose no additional burden on any person, good cause is found for an effective date less than 30 days from publication.

(Secs. 103, 110, 201, and 202, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421, and 1422; delegation of authority at 49 CFR 1.51.)

Issued on March 25, 1974.

James B. Gregory  
Administrator

**39 F.R. 11423**  
**March 28, 1974**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109****(Docket No. 74-3; Notice 2)**

This notice amends Motor Vehicle Safety Standard No. 109 (49 CFR 571.109) to specify the use of test wheels having up to 6 test positions in NHTSA compliance testing. A notice of proposed rulemaking regarding this subject was published January 10, 1974 (39 F.R. 1516).

Standard No. 109 has not previously specified the number of test positions which may be present on any given test wheel. Agency testing has been conducted on test wheels having up to six positions, which appears to be the maximum capacity of these wheels. The NHTSA is of the opinion that this testing is fully consistent with the standard's test procedure, but in order to avoid legal disputes has decided to clarify the standard by specifically incorporating into it NHTSA's present compliance testing practice.

The one comment which was received regarding the proposal did not object to the amendment's substance, but requested that temperatures be carefully monitored in NHTSA testing. The test temperature is specified in the standard and applies to each test regardless of the number of positions on a given test wheel. The NHTSA

will continue to carefully monitor its tire testing program to ensure the accuracy of the results obtained.

In light of the above, 49 CFR § 571.109 (Motor Vehicle Safety Standard No. 109) is amended by the addition of a new paragraph (f) in S4.2.1 . . . .

Effective date: October 7, 1974. This amendment is clarifying in nature, reflecting present practice, and poses no additional burden on any person. Consequently, good cause is found for an effective date less than 180 days from publication.

(Secs. 103, 108, 119, 201 and 202, Pub. L. 89-563; 80 Stat. 718; 15 U.S.C. 1392, 1397, 1407, 1421, 1422; delegations of authority at 49 CFR 1.51.)

Issued on August 30, 1974.

James B. Gregory  
Administrator

**39 F.R. 32321**

**September 6, 1974**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109****New Pneumatic Tires****(Docket No. 74-29; Notice 1)**

This notice republishes and corrects the text of Federal Motor Vehicle Safety Standard No. 109 (49 CFR § 571.109a), excluding Table I of the Appendix.

The corrections eliminate both typographical errors which occurred in the codification of the standard (in the *Code of Federal Regulations*) and material now extraneous as a result of amendments to the standard and the adoption of the Tire Identification and Recordkeeping Regulations, 49 CFR Part 574. The corrections are as follows:

(1) Figure 1 is deleted, and Figures 2 and 3 are redesignated Figures 1 and 2 respectively.

(2) Paragraph S5.2.1.3 and S5.2.2.1 are modified to reflect the changes in the designations of Figures 2 and 3.

(3) Paragraph S6 is corrected to reflect the amendment of August 17, 1972 (37 F.R. 16604), by deleting paragraph S6.1 and the paragraphs following.

The notice also redesignates the standard as § 571.109. The previous designation, § 571.109a, resulted from an amendment (38 F.R. 27050, September 28, 1973) with a future effective date (March 29, 1974) outstanding at the time the most recent version of the Code was published. The passing of that effective date eliminates the need for Section 571.109a.

In light of the above, § 571.109a (excluding Table I of the Appendix) of Title 49, Code of Federal Regulations, is redesignated § 571.109 and corrected and republished . . . .

(Secs. 103, 119, 201, 202, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421, 1422; delegations of authority at 49 CFR 1.51.)

Issued on August 7, 1974.

James B. Gregory  
Administrator

**39 F.R. 31322**  
**August 28, 1974**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

### New Pneumatic Tires

(Docket No. 74-25; Notice 2)

This notice amends the definition of "test rim" in 49 CFR 571.109 (Motor Vehicle Safety Standard No. 109) and modifies related provisions of that section and section 571.110 (Motor Vehicle Safety Standard No. 110). A conforming amendment is made to similar provisions in section 571.119 (Motor Vehicle Safety Standard No. 119). The notice of proposed rulemaking on which this amendment is based was published on July 10, 1974 (39 F.R. 25329).

The definition of "test rim" has previous to this amendment referenced the 1967 and earlier editions of publications of various foreign and domestic tire and rim associations as the source for determining rim specifications and appropriate tire/rim matching information for testing tires to the requirements of Motor Vehicle Safety Standard No. 109, and for equipping passenger cars pursuant to Motor Vehicle Safety Standard No. 110. The Rubber Manufacturers' Association petitioned that this reference be changed because the publications have become outdated in terms of the rim information they provide. This amendment, which adopts the proposed rule of July 10, 1974, in essentially the form proposed, deletes the references to the 1967 and earlier publications and substitutes for them the publications of the various associations current at the time of tire manufacture.

Under the amendment, a "test rim" will be any rim listed for use with a tire size designation in any of the current publications of the various foreign and domestic tire and rim associations. The listing will apply to all tires that fit the description (by tire size designation, use category, etc.) unless the publication itself or a separately published manufacturer's document states otherwise. A manufacturer wishing to except any

tire manufactured by him from any listing would be expected to request the association to publish the exception in its publication. If it does not, the manufacturer must himself publish the exception in his own listing, which he must distribute to his dealers, this agency, and to any member of the public on request. The language of the proposal is clarified, and a conforming amendment made to Standard No. 119 to show that an exception must be published in each association publication listing the tire and rim combination. The amendment further specifies that a "listing" of a rim must contain dimensional specifications, including diagrams, for the rim. This is necessary to provide for uniformity of rim dimensions and reflects the present practice of association publications of publishing such dimensional specifications. However, dimensional specifications or a diagram of a rim need not be included in manufacturers' separate listings if the specifications and diagram for the rim appear in each association publication where it is listed.

By referencing the current publications, the amendment ends the need for Appendix "A" of Standard No. 110, which lists tire/rim combinations approved for use subsequent to the 1967 and earlier associations publications. The associations and various manufacturers should ascertain that all tire/rim combinations presently listed in that Appendix are incorporated into at least one of their respective publications before the effective date of this amendment. Moreover, the addition of new tire/rim combinations subsequent to the effective date becomes the sole responsibility of the industry. Appendix "A" of Standard No. 109, listing tire size designations, is not affected by this amendment.

An effect of the amended definition of test rim is to clarify this agency's position that each tire must be able to pass each performance requirement (except that for physical dimensions) of Standard No. 109 with any rim with which it is listed, regardless of rim width, unless that tire is specifically excepted from each listing where it appears. The requirements for physical dimensions must be met only on a test rim of the width specified for the tire size designation in Standard No. 109. A tire failing the requirements on any test rim would be considered as having failed the requirements on all test rims. This continues existing NHTSA enforcement policy.

One of the two comments received regarding the proposal objected to this aspect of the amendment, arguing that some manufacturers have traditionally certified conformity on the basis of test results using only the test rims of the specified test rim width and that no safety problems had been encountered. The NHTSA believes, however, that the interest of safety demands that manufacturers ensure that tires certified as conforming to Standard No. 109 will conform to the standard's requirements on any rim which the manufacturer lists for use with the tire and with which the tire may consequently be used in service. This position has been reflected in the guidelines for the additions of new tire/rim combinations to the Appendix of Standard No.

110, which have required that the manufacturer demonstrate conformity to Standard No. 109 on each newly requested rim. If a manufacturer doubts the ability of his tires to conform to the standard on certain recommended rims, he has the option of excepting his tires from being used with those rims. No other objections to the proposed rule were received.

In light of the above, amendments are made to 49 CFR §§ 571.109, 571.110, and 571.119 . . . .

*Effective date:* August 5, 1975 for Standard No. 109 and 110; March 1, 1975, for Standard No. 119. The amendment to Standard No. 119 is of a clarifying nature, and should be made effective with the existing effective date of that standard. The amendment does not require substantial leadtime for conformity, and it is found for good cause shown that an effective date less than 180 days from publication is in the public interest.

(Secs. 103, 119, 201, 202, Pub. L. 89-563, 80 Stat. 718; 15 U.S.C. §§ 1392, 1407, 1421, 1422; delegation of authority at 49 CFR 1.51.)

Issued on January 31, 1975.

James B. Gregory  
Administrator

40 F.R. 5529  
February 6, 1975

## MOTOR VEHICLE SAFETY STANDARD NO. 109

### New Pneumatic Tires—Passenger Cars

**51. Scope.** [This standard specifies tire dimensions and laboratory test requirements for bead unseating resistance, strength, endurance, and high speed performance; defines tire load ratings; and specifies labeling requirements for passenger car tires. (37 F.R. 16604—August 17, 1972. Effective: 10/1/72)]

**52. Application.** [This standard applies to new pneumatic tires for use on passenger cars manufactured after 1948. However, it does not apply to any tire which has been altered so as to render impossible its use, or its repair for use, as motor vehicle equipment. (37 F.R. 16604—August 17, 1972. Effective: 10/1/72)]

#### 53. Definitions.

“Bead” means that part of the tire made of steel wires, wrapped or reinforced by ply cords, that is shaped to fit the rim.

“Bead separation” means a breakdown of bond between components in the bead area.

“Bias ply tire” means a pneumatic tire in which the ply cords that extend to the beads are laid at alternate angles substantially less than 90° to the centerline of the tread.

“Carcass” means the tire structure, except tread and sidewall rubber.

["Chunking" means the breaking away of pieces of the tread or sidewall. (38 F.R. 27050—September 28, 1973. Effective: 3/29/74)]

“Cord” means the strands forming the plies in the tire.

“Cord separation” means cord parting away from adjacent rubber compounds.

["Cracking" means any parting within the tread, sidewall, or innerliner of the tire extending to cord material. (38 F.R. 27050—September 28, 1973. Effective: 3/29/74)]

“Groove” means the space between two adjacent tread ribs.

["Innerliner" means the layer(s) forming the inside surface of a tubeless tire that contains the inflating medium within the tire.

“Innerliner separation” means the parting of the innerliner from cord material in the carcass. (39 F.R. 11423—March 28, 1974. Effective: 3/29/74)]

“Load rating” means the maximum load a tire is rated to carry for a given inflation pressure.

“Maximum permissible inflation pressure” means the maximum cold inflation pressure to which a tire may be inflated.

“Maximum load rating” means the load rating at the maximum permissible inflation pressure for that tire.

["Open splice" means any parting at any junction of tread, sidewall, or innerliner that extends to cord material. (38 F.R. 27050—September 28, 1973. Effective: 3/29/74)]

“Overall width” means the linear distance between the exteriors of the sidewalls of an inflated tire, including elevations due to labeling, decorations, or protective bands or ribs.

“Ply” means a layer of rubber-coated parallel cords.

“Ply separation” means a parting of rubber compound between adjacent plies.

“Pneumatic tire” means a mechanical device made of rubber, chemicals, fabric and steel or other materials, which, when mounted on an automotive wheel, provides the traction and contains the gas or fluid that sustains the load.

“Radial ply tire” means a pneumatic tire in which the ply cords which extend to the beads are laid at substantially 90° to the centerline of the tread.

“Rim” means a metal support for a tire or a tire and tube assembly upon which the tire beads are seated.

“Section width” means the linear distance between the exteriors of the sidewalls of an inflated tire, excluding elevations due to labeling, decoration, or protective bands.

“Sidewall” means that portion of a tire between the tread and the bead.

【“Sidewall separation” means the parting of the rubber compound from the cord material in the sidewall. (38 F.R. 27050—September 28, 1973. Effective: 3/29/74)】

“Size factor” means the sum of the section width and the outer diameter of a tire determined on the test rim.

【“Test rim” means, with reference to a tire to be tested, any rim that is listed as appropriate for use with that tire in accordance with S4.4. For purposes of this section and section 571.110 of this chapter, each rim listing shall include dimensional specifications and a diagram of the rim. (40 F.R. 5529—February 6, 1975. Effective: 8/5/75)】

“Tread” means that portion of a tire that comes into contact with the road.

“Tread rib” means a tread section running circumferentially around a tire.

“Tread separation” means pulling away of the tread from the tire carcass.

#### **S4. Requirements.**

**S4.1 Size and Construction.** Each tire shall be designed to fit each rim specified for its size designation in each reference cited in the definition of “test rim” in S.3.

#### **S4.2 Performance requirements.**

**S4.2.1 General.** 【Each tire shall conform to each of the following: (37 F.R. 16604—August 17, 1972. Effective: 10/1/72)】

(a) It shall meet the requirements specified in S4.2.2 for its tire size designation, type, and maximum permissible inflation pressure.

(b) Its maximum permissible inflation pressure shall be either 32, 36, or 40 p.s.i.

(c) Its load rating shall be that specified in Table I for its size designation, type, and each appropriate inflation pressure.

(d) If manufactured on or after August 1, 1968, it shall incorporate a tread wear indicator that will provide a visual indication that the tire has worn to a tread depth of  $\frac{1}{16}$  inch.

【(e) It shall, before being subjected to either the endurance test procedure specified in S5.4 or the high speed performance test procedure specified in S5.5, exhibit no visual evidence of tread, sidewall, ply, cord, innerliner, or bead separation, chunking, broken cords, cracking or open splices. (38 F.R. 27050—September 28, 1973. Effective: 3/29/74)】

#### **S4.2.2 Test requirements.**

**S4.2.2.1 Test sample.** For each test sample use—

(a) One tire for physical dimensions, resistance to bead unseating, and strength, in sequence;

(b) Another tire for tire endurance; and

(c) A third tire for high-speed performance.

**S4.2.2.2 Physical Dimensions.** Each tire, when measured in accordance with S5.1, shall conform to each of the following:

(a) Its actual section width and overall width shall not exceed by more than 7 percent the section width specified in Table I for its size designation and type; and

(b) Its size factor shall be at least as large as that specified in Table I for its size designation and type.

**S4.2.2.3 Tubeless tire resistance to bead unseating.** When tested in accordance with S5.2, the applied force required to unseat the tire bead at the point of contact shall not be less than:

(a) 1500 pounds for tires with a designated section width of less than six (6) inches;

(b) 2000 pounds for tires with a designated section width of six (6) inches or more, but less than eight (8) inches;

(c) 2500 pounds for tires with a designated section width of eight (8) inches or more, using the section width specified in Table I for the applicable tire size designation and type.

**S4.2.2.4 Tire strength.** Each tire shall meet the requirements for minimum breaking energy specified in Table II when tested in accordance with S5.3.

**S4.2.2.5 Tire endurance.** 【When the tire has been subjected to the laboratory endurance test specified in S5.4, using a test rim that undergoes no permanent deformation and allows no loss

of air through the portion that it comprises of the tire-rim pressure chamber:

(a) There shall be no visual evidence of tread, sidewall, ply, cord, innerliner, or bead separation, chunking, broken cords, cracking, or open splices.

(b) The tire pressure at the end of the test shall be not less than the initial pressure specified in S5.4.1.1. (38 F.R. 27050—September 28, 1973. Effective: 3/29/74)】

**S4.2.2.6 High speed performance.** 【When the tire has been subjected to the laboratory high speed performance test specified in S5.5, using a test rim that undergoes no permanent deformation and allows no loss of air through the portion that it comprises of the tire-rim pressure chamber, the tire shall meet the requirements set forth in S4.2.2.5(a) and (b). (38 F.R. 27050—September 28, 1973. Effective: 3/29/74)】

**S4.3 Labeling requirements.** 【Except as provided in S4.3.1 and S4.3.2, each tire shall have permanently molded into or onto both sidewalls, in letters and numerals not less than 0.078 inches high, the information shown below in (a) through (g):

(a) One size designation, except that equivalent inch and metric size designations may be used;

(b) Maximum permissible inflation pressure;

(c) Maximum load rating;

(d) The generic name of each cord material used in the plies (both sidewall and tread area) of the tire;

(e) Actual number of plies in the sidewall, and the actual number of plies in the tread area if different;

(f) The words "tubeless" or "tube type" as applicable; and

(g) The word "radial" if the tire is a radial ply tire.

**S4.3.1** Each tire shall be labeled with the symbol DOT in the manner specified in Part 574 of this chapter, which shall constitute a certification that the tire conforms to applicable Federal motor vehicle safety standards.

**S4.3.2** Each tire shall be labeled with the name of the manufacturer, or brand name and number assigned to the manufacturer in the manner specified in Part 574. (35 F.R. 16735—October 29, 1970. Effective: 12/1/70)】

**【S4.3.3** Each tire manufactured between March 1, 1971, and May 22, 1971, shall either—

(a) Comply with S4.3(d)(2) and S4.3(i) (as effective until May 22, 1971); or

(b) Be labeled with the tire identification number required by Part 574.5 of this chapter and comply with S4.3.1 and S4.3.2 (as effective on and after May 22, 1971). (36 F.R. 4290—March 4, 1971. Effective: 3/4/71)】

**【S4.4 Tire and rim matching information.**

**S4.4.1** Each manufacturer of tires shall ensure that a listing of the rims that may be used with each tire that he produces is provided to the public. A listing compiled in accordance with paragraph (a) of this section need not include dimensional specifications or diagram of a rim if the rim's dimensional specifications and diagram are contained in each listing published in accordance with paragraph (b). The listing shall be in one of the following forms:

(a) Listed by manufacturer name or brand name in a document furnished to dealers of the manufacturer's tires, to any person upon request, and in duplicate to: Tire Division, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590; or

(b) Contained in publications, current at the date of manufacture of the tire or any later date, of at least one of the following organizations:

The Tire and Rim Association.

The European Tyre and Rim Technical Organisation.

Japanese Industrial Standards.

Deutsche Industrie Norm.

The Society of Motor Manufacturers & Traders, Ltd.

British Standards Institution

Scandinavian Tire and Rim Organisation.

**S4.4.2** Information contained in any publication specified in S4.4.1(b) which lists general categories of tires and rims by size designation, type of construction and/or intended use, shall be considered to be manufacturer's information pursuant to S4.4.1 for the listed tires and rims, unless the publication itself or specified information provided according to S4.4.1(a) indicates otherwise. (40 F.R. 5529—February 6, 1975. Effective: 8/5/75)】

**S5. Test procedures.**

**S5.1 Physical Dimensions.** Determine tire physical dimensions under uniform ambient conditions as follows:

(a) [Mount the tire on a test rim having the test rim width specified in Appendix A of this section for that tire size designation and inflate it to the applicable pressure specified in Table III. (40 F.R. 5529—February 6, 1975. Effective: 8/5/75)]

(b) Condition it at ambient room temperature for at least 24 hours.

(c) Readjust pressure to that specified in (a).

(d) Caliper the section width and overall width at six points approximately equally spaced around the tire circumference.

(e) Record the average of these measurements as the section width and overall width, respectively.

(f) Determine tire outer diameter by measuring the maximum circumference of the tire and dividing this dimension by pi (3.14).

**S5.2 Tubeless tire bead unseating resistance.**

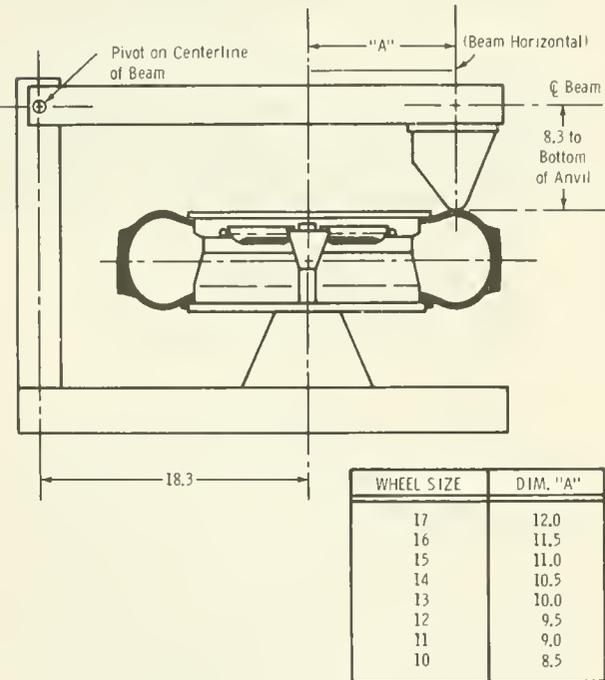
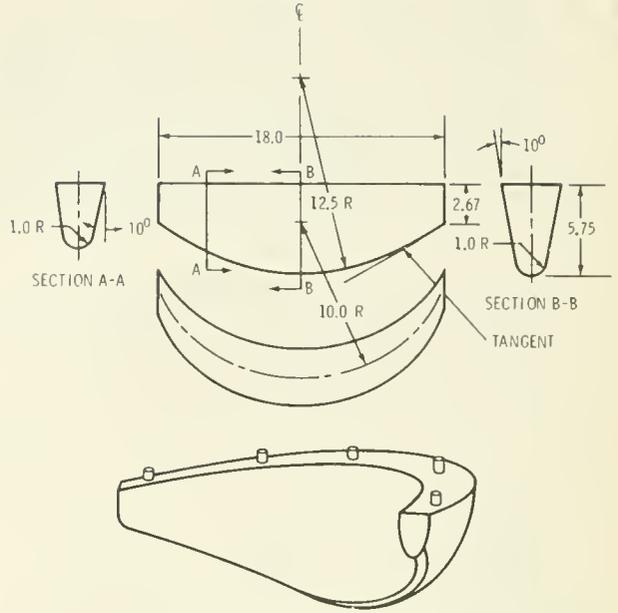


FIGURE 1 - Bead Unseating Fixture Dimensions in Inches



MATERIAL: Cast Aluminum 355  
T-6 Condition  
Finish - 50 Micro Inch

FIGURE 2 - Diagram of Bead Unseating Block Dimensions in Inches

**S5.2.1 Preparation of tire-wheel assembly.**

**S5.2.1.1** Wash the tire, dry it at the beads, and mount it without lubrication or adhesives on a clean, painted test rim.

**S5.2.1.2** Inflate it to the applicable pressure specified in Table III at ambient room temperature.

**S5.2.1.3** Mount the wheel and tire in the fixture shown in Figure 1, and force the standard block shown in Figure 2 against the tire sidewall as required by the geometry of the fixture.

**S5.2.2 Test procedure.**

**S5.2.2.1** Apply a load through the block to the tire outer sidewall at the distance specified in Figure 1 for the applicable wheel size at a rate of 2 inches per minute, with the load arm substantially parallel to the tire and rim assembly at the time of engagement.

**S5.2.2.2** Increase the load until the bead unseats or the applicable value specified in S4.2.2.3 is reached.

**55.2.2.3** Repeat the test at least four places equally spaced around the tire circumference.

### 55.3 Tire strength.

#### 55.3.1 Preparation of tire.

**55.3.1.1** Mount the tire on a test rim and inflate it to the applicable pressure specified in Table III;

**55.3.1.2** Condition it at room temperature for at least 3 hours; and

**55.3.1.3** Readjust its pressure to that specified in S5.3.1.1.

#### 55.3.2 Test procedure.

**55.3.2.1** Force a  $\frac{3}{4}$ -inch diameter cylindrical steel plunger with a hemispherical end perpendicularly into the tread rib as near to the centerline as possible, avoiding penetration into the tread groove, at the rate of 2 inches per minute.

**55.3.2.2** Record the force and penetration at five test points equally spaced around the circumference of the tire. If the tire fails to break before the plunger is stopped by reaching the rim, record the force and penetration as the rim is reached and use these values in S5.3.2.3.

**55.3.2.3** Compute the breaking energy for each test point by means of the following formula:

$$W = \frac{F \times P}{2}$$

where

W=Energy, inch-pounds;

F=Force, pounds; and

P=Penetration, inches.

**55.3.2.4** Determine the breaking energy value for the tire by computing the average of the five values obtained in accordance with S5.3.2.3.

### 55.4 Tire endurance.

#### 55.4.1 Preparation of tire.

**55.4.1.1** Mount a new tire on a test rim and inflate it to the applicable pressure specified in Table III.

**55.4.1.2** Condition the tire assembly to  $100 \pm 5^\circ\text{F}$ . for at least three hours.

**55.4.1.3** Readjust tire pressure to that specified in S5.4.1.1 immediately before testing.

#### 55.4.2 Test procedure.

**55.4.2.1** Mount the tire and wheel assembly on a test axle and press it against a flat-faced steel test wheel 67.23 inches in diameter and at least as wide as the section width of the tire to be tested or an approved equivalent test wheel, with the applicable test load specified in Table I for the tire's size designation, type, and maximum permissible inflation pressure.

**55.4.2.2** During the test, the air surrounding the test area shall be  $100 \pm 5^\circ\text{F}$ .

**55.4.2.3** Conduct the test at 50 miles per hour in accordance with the following schedule without pressure adjustment or other interruptions:

Maximum Permissible Inflation Pressure (psi)	Load from Table I		
	for 4 hrs.	for 6 hrs.	for 24 hrs.
32	24 lb/in <sup>2</sup> column	28 lb/in <sup>2</sup> column	32 lb/in <sup>2</sup> column
36	28 lb/in <sup>2</sup> column	32 lb/in <sup>2</sup> column	36 lb/in <sup>2</sup> column
40	32 lb/in <sup>2</sup> column	36 lb/in <sup>2</sup> column	40 lb/in <sup>2</sup> column

**55.4.2.4** [Immediately after running the tire the required time, measure its inflation pressure. Allow the tire to cool for one hour. Then deflate the tire, remove it from the test rim, and inspect it for the conditions specified in S4.2.2.5(a). (39 F.R. 11423—March 28, 1974. Effective: 3/29/74)]

### 55.5 High speed performance.

**55.5.1** After preparing the tire in accordance with S5.4.1, mount the tire and wheel assembly in accordance with S5.4.2.1, and press it against the test wheel with the load specified in Table I for the tire's size designation and the applicable pressure specified in Column B of the following table:

A Maximum Permissible Inflation Pressure (psi)	B Load from Table I
32	24 lb/in <sup>2</sup> column
36	28 lb/in <sup>2</sup> column
40	32 lb/in <sup>2</sup> column

**55.5.2** Break in the tire by running it for 2 hours at 50 mph.

**S5.5.3** Allow it to cool to  $100 \pm 5^{\circ}\text{F}$  and re-adjust the inflation pressure to the applicable pressure specified in Table III.

**S5.5.4** [Without readjusting inflation pressure, test at 75 mph for 30 minutes, 80 mph for 30 minutes, and 85 mph for 30 minutes. (35 F.R. 11241—July 14, 1970. Effective: 1/1/71)]

**S5.5.5** [Immediately after running the tire the required time, measure its inflation pressure. Allow the tire to cool for one hour. Then deflate the tire, remove it from the test rim, and inspect it for the conditions specified in S4.2.2.5(a).

(39 F.R. 11423—March 28, 1974. Effective: 3/29/74)]

**[S6. Nonconforming tires.** No tire of a type and size designation specified in Table I of Appendix A that is designed for use on passenger cars and manufactured on or after October 1, 1972, but does not conform to all the requirements of this standard, shall be sold, offered for sale, introduced or delivered for introduction in interstate commerce, or imported into the United States, for any purpose. (37 F.R. 16604—August 17, 1972. Effective: 10/1/72)]

## APPENDIX

TABLE II—Minimum Breaking Energy Values  
(Inch-Pounds)TABLE II-A—For Bias Ply Tires  
With Size Designation of 6.00 (or 155 Millimeters)  
and Above and 70 Series Tires

<i>Cord Material</i>	<i>Maximum Permissible Inflation Pressure</i>		
	<i>32 lb/in<sup>2</sup></i>	<i>36 lb/in<sup>2</sup></i>	<i>40 lb/in<sup>2</sup></i>
Rayon	1650 in.-lbs.	2574 in.-lbs.	3300 in.-lbs.
Nylon or Polyester	2600 in.-lbs.	3900 in.-lbs.	5200 in.-lbs.

TABLE II-B—For Bias Ply Tires  
With Size Designation Below 6.00 Inches  
(or 155 Millimeters)

<i>Cord Material</i>	<i>Maximum Permissible Inflation Pressure</i>		
	<i>32 lb/in<sup>2</sup></i>	<i>36 lb/in<sup>2</sup></i>	<i>40 lb/in<sup>2</sup></i>
Rayon	1000 in.-lbs.	1875 in.-lbs.	2500 in.-lbs.
Nylon or Polyester	1950 in.-lbs.	2925 in.-lbs.	3900 in.-lbs.

TABLE II-C—For Radial Ply Tires

<i>Size Designation</i>	<i>Maximum Permissible Inflation Pressure</i>		
	<i>32 lb/in<sup>2</sup></i>	<i>36 lb/in<sup>2</sup></i>	<i>40 lb/in<sup>2</sup></i>
Below 160 Millimeters	1950 in.-lbs.	2925 in.-lbs.	3900 in.-lbs.
160 Millimeters or above	2600 in.-lbs.	3900 in.-lbs.	5200 in.-lbs.

TABLE III—Test Inflation Pressures

<i>Maximum permissible inflation pressure (in psi)</i>	<i>32</i>	<i>36</i>	<i>40</i>
Pressure (in psi) to be used in tests for physical dimensions, bead unseating, tire strength, and tire endurance	24	28	32
Pressure (in psi) to be used in test for high-speed performance	30	34	38



## APPENDIX A

## GUIDELINES FOR ABBREVIATED RULEMAKING PROCEDURE FOR ADDING TIRE SIZES TO STANDARD NO. 109

Tables I-A through I-J of Standard No. 109, as amended (33 F.R. 5946-5949) are deleted and in their places the following is inserted:

The following tables list tire sizes and tire constructions with proper load and inflation values. The tables group tires of related construction and load/inflation values. Persons requesting the addition of new tire sizes to the tables or the addition of tables for new tire construction may, when the additions requested are compatible with existent groupings, or when adequate justification for new tables exists, submit five (5) copies of information and data supporting the request to the Secretary of Transportation, Attention: Motor Vehicle Programs, National Highway Traffic Safety Administration, U.S. Department of Transportation, Washington, D.C. 20590.

The information should contain but not be limited to the following:

(1) The tire size designation and whether the tire is an addition to a category of tires listed in the tables, or a new category for which a table has not been developed.

(2) The tire dimensions, including aspect ratio, size factor, section width, overall width and test rim size.

(3) The load-inflation schedule of the tire.

(4) A statement as to whether the tire size designation and load inflation schedule has been

coordinated with an organization such as The Tire and Rim Association, The European Tyre and Rim Technical Organization, The Society of Manufacturers and Traders Limited and the Japan Automobile Tire Manufacturers Association, whose purpose is to standardize tire and rim sizes.

(5) Copies of test data sheets showing test conditions, results and conclusions obtained for individual tests specified in FMVSS No. 109.

(6) Justification for the additional tire sizes.

The addition of new size tires to the tables, or the addition of tables for new tire construction, is accomplished through an abbreviated procedure consisting of the publication in the *Federal Register* of the petitioned tire sizes or tables. If no comments are received, the amendment becomes effective after 30 days from the date of publication. If comments objecting to amendment are received, additional rule making pursuant to Part 353 of the Procedural Rules for Motor Vehicle Safety Standards will be considered.

Amendments to Appendix A of Standard No. 109 may be issued by the Director of Motor Vehicle Programs, National Highway Traffic Safety Administration.

33 F.R. 14964  
October 5, 1968

**PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY  
STANDARD NO. 109**

(Docket No. 69-30; Notice No. 1)

On October 5, 1968, the Federal Highway Administration published guidelines in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A of Standard No. 109 and the Appendix A of Standard No. 110. These guidelines provided an abbreviated rule-making procedure for adding tire sizes to Standard No. 109 and alternative rim sizes to Standard No. 110, whereby the addition becomes effective 30 days from date of publication in the *Federal Register* if no objections to the proposed additions are received. If comments objecting to the amendment warrant, rule making pursuant to the rule making procedures for motor vehicle safety standards (49 CFR 353) will be followed.

The European Tyre and Rim Technical Organisation has petitioned for the addition of the new "Millimeter 70 Series" radial ply tires and the new "Low Section" radial ply tires to Table I of Appendix A of Standard No. 109 and the appropriate test and alternative rims to Table I of Appendix A of Standard No. 110. Also, the Toyota Motor Company, Ltd. has petitioned for the addition of the 5-K alternative rim size for the 165R15 tire size designation to Table I of Appendix A of Standard No. 110.

On the basis of the data submitted by the European Tyre and Rim Technical Organisation and the Toyota Motor Company, Ltd., indicating compliance with the requirements of Federal

Motor Vehicle Safety Standard No. 109 and No. 110 and other information submitted in accordance with the procedural guidelines set forth, Appendix A of Federal Motor Vehicle Safety Standard No. 109 is being amended and Table I of Appendix A of Standard No. 110 is being amended.

In consideration of the foregoing, Section 371.21 of Part 371 Federal Motor Vehicle Safety Standards, Appendix A of Standards No. 109 (33 F.R. 14964) and Appendix A of Standard No. 110 (34 F.R. 16102) are being amended as set forth below effective 30 days from date of publication in the *Federal Register*.

These amendments are issued under authority of Sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 USC 1392, 1407), and delegation from the Secretary of Transportation contained in § 1.4(c) of Part 1 of the Regulations of the Office of the Secretary (49 CFR 1.4(c)), and the delegation from the Federal Highway Administrator of October 5, 1968 (33 F.R. 14964).

H. M. Jacklin, Jr.  
Acting Director

Motor Vehicle Safety Performance Service

**34 F.R. 14376**  
**September 13, 1969**

## APPENDIX A—FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

The following tables list tire sizes and tire constructions with proper load and inflation values. The tables group tires of related constructions and load/inflation values. Persons requesting the addition of new tire sizes to the tables or the addition of tables for new tire constructions may, when the additions requested are compatible with existent groupings, or when adequate justification for new tables exists, submit five (5) copies of information and data supporting the request to the Secretary of Transportation, Attention: Motor Vehicle Programs, National Highway Traffic Safety Administration, U.S. Department of Transportation, Washington, D.C. 20590.

The information should contain the following:

1. The tire size designation, and a statement that the tire is an addition to a category for which a table has not been developed.
2. The tire dimensions, including aspect ratio, size factor, section width, overall width, and test rim size.
3. The load-inflation schedule of the tire.
4. A statement that the tire size designation and load inflation schedule has been coordinated

with the Tire and Rim Association, the European Tyre and Rim Technical Organisation, the Society of Manufacturers and Traders Limited, the Japan Automobile Tire Manufacturers Association, the Deutsche Industrie Norm and the Scandinavian Tire and Rim Organization.

5. Copies of test data sheets showing test conditions, results and conclusions obtained for individual tests specified in Federal Motor Vehicle Safety Standard No. 109.

6. Justification for the additional tire sizes.

The addition of new size tires to the tables, or the addition of tables for new tire construction, is accomplished through an abbreviated procedure consisting of publication in the *Federal Register* of the petitioned tire sizes or tables. If no comments are received, the amendment becomes effective 30 days from the date of publication. If objections to the amendment are received, additional rulemaking pursuant to Part 553 of the procedural rules for Motor Vehicle Safety Standards will be initiated.

**36 F.R. 8298**  
**May 4, 1971**



**PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE  
SAFETY STANDARD NO. 109**

**New Pneumatic Tires—Passenger Cars**

**(Docket No. 71-9; Notice No. 1)**

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14969) by which routine additions of tire and rim sizes could be added to Appendix A of Standard No. 109 and to Appendix A of Standard No. 110. Under these guidelines, the addition becomes effective 30 days from the date of its publication in the *Federal Register*, if no objections to the proposed additions are received. If objections to the amendment are received, rulemaking pursuant to the procedures for motor vehicle safety standards (49 CFR Part 553) are followed. Numerous additions to Appendix A of Standard 109 and Appendix A of Standard 110 have been made under these procedures, and Appendix A of Standard No. 109 and Appendix A of Standard No. 110 are being reissued at this time to incorporate all the changes that have been made to these appendices since October 5, 1968.

At the top of each table in the appendices there is an amendment number that indicates the number of times the table has been amended since its original issue. Where feasible, a brief note below the table indicates the substance of the change being made. This procedure will be followed in future amendments to the tables.

In addition to republishing all previous additions to the tables, new tire size designations and alternative rims are hereby added to various tables. The European Tyre and Rim Technical Organisation has petitioned for the addition of 140 R 12 and 6.5-13 as tire size designations in Appendix A of Standard No. 109, and has requested that test and alternate rim(s) for these tires be added to Appendix A of Standard No. 110.

The European Tyre and Rim Technical Organisation has also petitioned for the addition of the following alternative rims to Table I—Appendix A of Standard No. 110.

Tire size designation:	<i>Alternative rim</i>
175-13/6.95-13 -----	5½-J.
6.2-13 -----	4½-J.
205 R 14 -----	7½-K.
205 R 15 -----	6½-L.

In addition to the above, the following errors in the tables have been brought to the National Highway Traffic Safety Administration's attention and are hereby corrected:

(a) Standard No. 109—Appendix A—Table I-B. The 26-pound inflation pressure maximum load for the A70-13 tire size designation is changed to read "940".

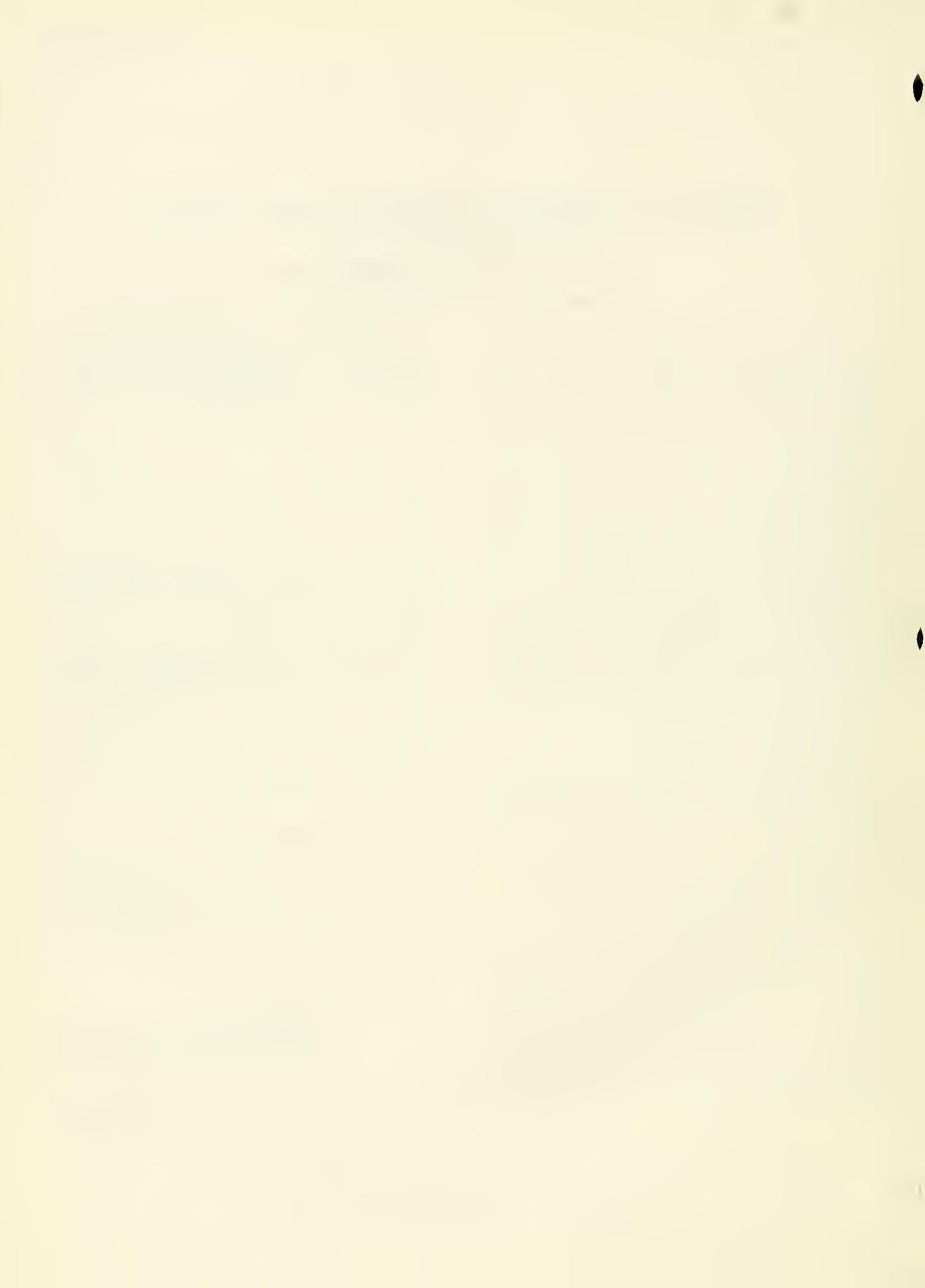
(b) Standard No. 110—Appendix A—Table I. The alternate rim "5½-J" of the 6.40-15 tire size in section Table I-C is corrected to read "5½-JJ".

In consideration of the foregoing, § 571.21 of Part 571, Federal Motor Vehicle Safety Standards, Appendix A of Standard No. 109 and Appendix A of Standard No. 110 are amended . . . effective 30 days from date of publication in the *Federal Register*.

Issued on April 16, 1971.

Rodolfo A. Diaz,  
Acting Associate Administrator,  
Motor Vehicle Programs

**36 F.R. 8298  
May 4, 1971**



**PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE  
SAFETY STANDARD NO. 109**

**New Pneumatic Tires—Passenger Cars  
(Docket No. 71-12; Notice No. 1)**

This amendment adds certain tire sizes and alternative rim sizes to the passenger car tire standard and the tire selection and rim standard.

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A, Standard No. 109 and to Appendix A, Standard No. 110. Under these guidelines, the addition becomes effective 30 days from date of publication in the *Federal Register*, if no objections to the proposed additions are received. If objections to the amendment are received, rulemaking pursuant to the procedures for motor vehicle safety standards (49 CFR 553) are followed. All changes made to the appendices as of April 16, 1971 were reissued and incorporated into the tables and republished in the *Federal Register* of May 4, 1971 (36 F.R. 8298).

The Rubber Manufacturers Association has petitioned for the addition of the new AR78-13, CR78-13, D78-13, DR70-13, BR78-14, CR70-14, E60-14, H60-14, A78-15, AR78-15, and HR60-15 tire size designations to Table I, Appendix A of Standard No. 109 and the appropriate test and alternative rims to Table I, Appendix A of Standard No. 110.

The Rubber Manufacturers Association has also petitioned for the addition of the 6-JJ alternative rim size for the JR70-15 and LR70-15 tire size designations; the 8-JJ alternative rim size for the FR60-15 and GR60-15 tire size designations and the 4-JJ alternative rim size

for the 175R13 tire size designation to Table I, Appendix A of Standard No. 110.

The European Tyre and Rim Technical Organisation has petitioned for the addition of the 8½-L and 8-K alternative rims for the GP70-15 tire size designation to Table I, Appendix A of Standard No. 110.

The Ford Motor Company has petitioned for the addition of the 5½-JJ alternative rim size for the 175R13 tire size designation to Table I, Appendix A of Standard No. 110.

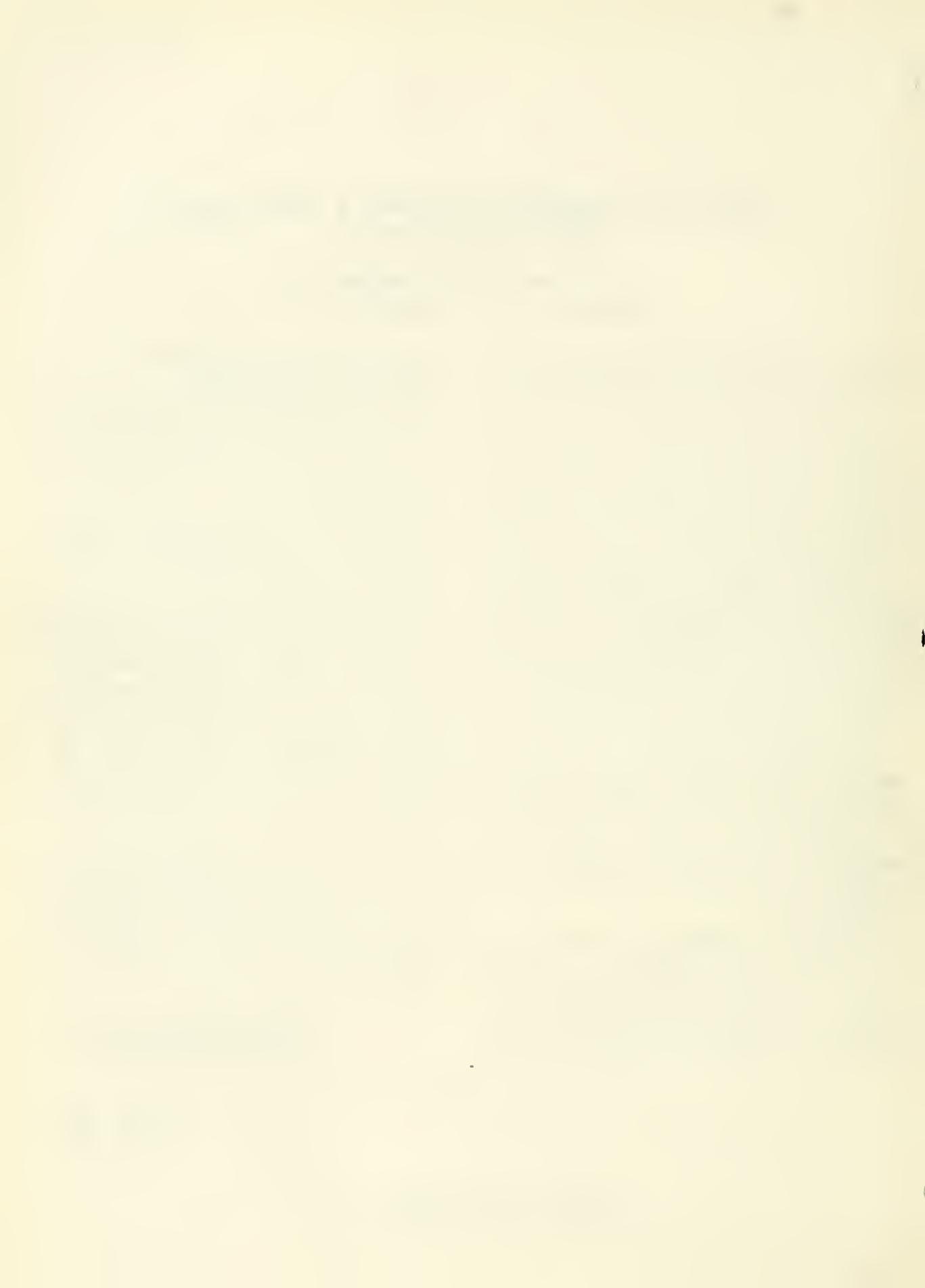
On the basis of the data submitted by the Rubber Manufacturers Association, the European Tyre and Rim Technical Organisation, and the Ford Motor Company indicating compliance with the requirements of Federal Motor Vehicle Safety Standards No. 109 and No. 110 and other information submitted in accordance with the procedural guidelines set forth, Table I, Appendix A of Standard No. 109 is being amended and Table I, Appendix A of Standard No. 110 is being amended.

In consideration of the foregoing, § 571.21 of Part 571 Federal Motor Vehicle Safety Standards, Appendix A of Standard No. 109 and Appendix A of Standard No. 110 are amended to read as set forth below, effective 30 days from date of publication in the *Federal Register*.

Issued on May 24, 1971.

Robert L. Carter  
Acting Associate Administrator  
Motor Vehicle Programs

36 F.R. 10733  
June 2, 1971



**PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE  
SAFETY STANDARD NO. 109**

**New Pneumatic Tires—Passenger Cars  
(Docket No. 71-16; Notice No. 1)**

This amendment adds certain tire sizes and alternative rim size to the passenger car tire standard and the tire selection and rim standard.

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A, Standard No. 109 and to Appendix A, Standard No. 110. Under these guidelines, the addition becomes effective 30 days from date of publication in the *Federal Register*, if no objections to the proposed additions are received. If objections to the amendment are received, rule-making pursuant to the procedures for motor vehicle safety standards (49 CFR 553) are followed. All changes made to the appendices as of April 16, 1971 were reissued and incorporated into the tables and republished in the *Federal Register* of May 4, 1971 (36 F.R. 8298).

The European Tyre and Rim Technical Organisation has petitioned for the following:

(1) The addition of the new 205/70 R14, 215/70 R14, 225/70 R14, 195/70 R15, 205/70 R15, 215/70 R15, 225/70 R15, 150 R12, 150 R14 and 180 R15 tire size designations to Table I, Appendix A of Standard No. 109 and the appropriate test and alternative rims to Table I, Appendix A of Standard No. 110.

(2) The addition of the 5.50 B alternative rim for the 165 R13 tire size designation to Table I, Appendix A of Standard No. 110.

(3) The addition of the 16 psi and 18 psi loads to Table I-H, Appendix A of Standard No. 109.

The Rubber Manufacturers Association has petitioned for the addition of the 6-JJ alternative rim size for the DR 78-14 tire size designation to Table I, Appendix A of Standard No. 110.

On the basis of the data submitted by the European Tyre and Rim Technical Organisation and the Rubber Manufacturers Association indicating compliance with the requirements of Federal Motor Vehicle Safety Standards No. 109 and 110 and other information submitted in accordance with the procedural guidelines, § 571.21 of Part 571 Federal Motor Vehicle Safety Standards, Appendix A of Standard No. 109 and Appendix A of Standard No. 110 are amended to read as set forth below, effective 30 days from date of publication in the *Federal Register*.

In addition, Appendix A of Standard No. 109 is amended in order to make it clear that requests for additional tire sizes should specify whether the tire is an addition to a category of tires listed in the tables, or a new category for which a table has not been developed.

Issued on July 13, 1971.

Robert L. Carter  
Acting Associate Administrator  
Motor Vehicle Programs

**36 F.R. 13601  
July 22, 1971**



**PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE**

**SAFETY STANDARD NO. 109**

**New Pneumatic Tires—Passenger Cars**

**(Docket No. 71-17; Notice No. 1)**

This amendment adds certain tire sizes and alternative rim size to the passenger car tire standard and the tire selection and rim standard.

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A, Standard No. 109 and to Appendix A, Standard No. 110. Under these guidelines, the addition becomes effective 30 days from date of publication in the *Federal Register*, if no objections to the proposed additions are received. If objections to the amendment are received, rulemaking pursuant to the procedures for motor vehicle safety standards (49 CFR 553) are followed. All changes made to the appendices as of April 16, 1971 were reissued and incorporated into the tables and republished in the *Federal Register* on May 4, 1971 (36 F.R. 8298).

The European Tyre and Rim Technical Organisation has petitioned for the addition of the 7-K alternative rim size for the 185/70 R15 tire size designation and the 6-JJ alternative rim size for the 205/70 R14 tire size designation to Table I, Appendix A of Standard No. 110.

The Rubber Manufacturers Association has petitioned for the addition of the 6½-JJ alternative rim size for the G78-15 tire size designation to Table I, Appendix A of Standard No. 110.

The Rubber Manufacturers Association has petitioned to change the test rim from 7½-inch to 7-inch for the J60-14, J60-15 and L60-15 tire size designations currently listed within the Table I-K, Appendix A of Standard No. 109.

Also, the Rubber Manufacturers Association has petitioned to correct the section width and minimum size factor measurements for the GR60-15 tire size designation listed within Table I-R, Appendix A of Standard No. 109.

On the basis of the data submitted by the European Tyre and Rim Technical Organisation and the Rubber Manufacturers Association indicating compliance with the requirements of Federal Motor Vehicle Safety Standards No. 109 and 110 and other information submitted in accordance with the procedural guidelines, § 571.21 of Part 571 Federal Motor Vehicle Safety Standards, Appendix A of Standard No. 109 and Appendix A of Standard No. 110 are amended as set forth below, effective 30 days from date of publication in the *Federal Register*.

Issued on July 22, 1971.

Robert L. Carter  
Acting Associate Administrator  
Motor Vehicle Programs

**36 F.R. 14134  
July 30, 1971**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 109

### Pneumatic Tires—Passenger Cars

(Docket No. 71-20, Notice 1)

This amendment adds certain tire sizes and alternative rim sizes to the passenger car tire standard and tire selection rim standard.

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A, Standard No. 109 and to Appendix A, Standard No. 110. Under these guidelines, the addition becomes effective 30 days from date of publication in the *Federal Register*, if no objections to the proposed additions are received. If objections to the amendment are received, rulemaking pursuant to the procedures for motor vehicle safety standards (49 CFR Part 553) are followed.

The Rubber Manufacturers Association has petitioned for the following:

(1) The addition of the new GR60-14 tire size designation to Table I, Appendix A of Standard No. 109 and the appropriate test and alternative rims to Table I, Appendix A of Standard No. 110.

(2) The addition of the following alternative rims to Table I, Appendix A of Standard No. 110:

(a) The 9-JJ alternative rim size for the G60-15 tire size designations.

(b) The 5-JJ and 6-JJ alternative rim sizes for the FR78-14 tire size designation.

(c) The 8-JJ alternative rim size for the F70-14 tire size designation.

(d) The 5-JJ alternative rim size for the D70-14 tire size designation.

(e) The 7-JJ alternative rim size for the GR70-15 tire size designation.

(f) The 6½-JJ alternative rim size for the 8.25-15 tire size designation.

The European Tyre and Rim Technical Organisation has petitioned for the following:

(1) The addition of the new 230-15, 245/60 R14 and 255/60 R15 tire size designations to Table I, Appendix A of Standard No. 109 and the appropriate test and alternative rims to Table I, Appendix A of Standard No. 110.

(2) The addition of the following alternative rims to Table I, Appendix A of Standard No. 110:

(a) The 9-L alternative rim size for the HR60-15 tire size designation.

(b) The 8K and 8½-L alternative rim sizes for the 225/70 R15 tire size designation.

(c) The 5½-JJ alternative rim size for the 155 R13 tire size designation.

On the basis of the data submitted by the European Tyre and Rim Technical Organisation and the Rubber Manufacturers Association indicating compliance with the requirements of Federal Motor Vehicle Safety Standards No. 109 and No. 110 and other information submitted in accordance with the procedural guidelines, § 571.21 of Part 571 Federal Motor Vehicle Safety Standards, Appendix A of Standard No. 109 and Appendix A of Standard 110 are amended to read as set forth below, effective 30 days from date of publication in the *Federal Register*.

Issued on October 21, 1971.

Robert L. Carter  
Acting Associate Administrator  
Motor Vehicle Programs

36 F.R. 21355  
November 6, 1971



## PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

## New Pneumatic Tires—Passenger Cars

(Docket No. 71-22; Notice No. 1)

This amendment adds certain tire sizes and alternative rim sizes to the passenger car tire standard and tire selection and rim standard.

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A, Standard No. 109 (§ 571.109) and to Appendix A, Standard No. 110 (§ 571.110). Under these guidelines, the addition becomes effective 30 days from date of publication in the *Federal Register*, if no objections to the proposed additions are received. If objections to the amendment are received, rulemaking pursuant to the procedures for motor vehicle safety standards (49 CFR Part 553) is followed.

The Rubber Manufacturers Association has petitioned for the following:

(1) The addition of the new AR70-13, B60-13 and BR60-13 tire size designations to Table I, Appendix A of Standard No. 109 and the appropriate test and alternative rims to Table I, Appendix A of Standard No. 110.

(2) The addition of the following alternative rim sizes to Table I, Appendix A of Standard No. 110:

(a) The 6½-JJ alternative rim size for the F78-15 tire size designation.

(b) The 6½-JJ alternative rim size for the 7.75-15 tire size designation.

The European Tyre and Rim Technical Organisation has petitioned for the addition of the following alternative rim sizes to Table I, Appendix A of Standard No. 110:

(1) The 5-JJ alternative rim size for the 145R13 tire size designation.

(2) The 4-JJ alternative rim size for the 150R13 tire size designation.

(3) The 6½-JJ alternative rim size for the 185R14 tire size designation.

(4) The 6½-JJ alternative rim size for the 9.00-15 tire size designation.

The Ford Motor Company has petitioned for the addition of the 5½-JJ alternative rim size for the 6.45-13/165-13 tire size designation to Table I, Appendix A of Standard No. 110.

The Toyota Motor Company, Ltd., has petitioned for the addition of the 4-JJ alternative rim for the 155R13 tire size designation to Table I, Appendix A of Standard No. 110.

On the basis of the data submitted by the European Tyre and Rim Technical Organisation, the Rubber Manufacturers Association, the Ford Motor Company and Toyota Motor Company, Ltd. indicating compliance with the requirements of Federal Motor Vehicle Safety Standards No. 109 and No. 110 and other information submitted in accordance with the procedural guidelines, § 571.109 and § 571.110 of Title 49, Code of Federal Regulations are amended, effective 30 days from date of publication in the *Federal Register*.

(Secs. 103 and 119, National Traffic and Motor Vehicle Safety Act of 1966, 15 U.S.C. 1392, 1407; delegations of authority at 49 CFR 1.51 and 501.8)

Issued on December 15, 1971.

Robert L. Carter  
Acting Associate Administrator  
Motor Vehicle Programs

36 F.R. 24940  
December 24, 1971



**PREAMBLE TO AMENDMENT TO  
APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109**

**New Pneumatic Tires—Passenger Cars**

**(Docket No. 72-18; Notice 1)**

This amendment adds certain tire sizes and accompanying values, and amends values for existing tire size designations in Motor Vehicle Safety Standard No. 109 (49 CFR § 571.109), and adds alternative rim sizes and test rims to Motor Vehicle Safety Standard No. 110 (49 CFR § 571.110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A, Standard No. 109, and to Appendix A, Standard No. 110. Under these guidelines the additions become effective 30 days from the date of publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking pursuant to the procedures for motor vehicle safety standards (49 CFR 553) is followed.

Beginning in January 1972, the NHTSA inaugurated a procedure whereby amendments to the tables of Appendix A of Standard No. 109 and Appendix A of Standard No. 110 would be published approximately 4 times per year: on

or about January 1, April 1, July 1, and October 1. Amendments to the tables were not published April 1 or July 1, 1972, and this notice publishes the amendments that would normally have been published on those dates.

Accordingly, Appendix A of Motor Vehicle Safety Standard No. 109 (49 CFR § 571.109), and Appendix A of Motor Vehicle Safety Standard No. 110 (49 CFR § 571.110), are amended, subject to the thirty-day provision indicated above, as specified below.

This notice is issued under the authority of sections 103, 119, 201, and 202 of the National Traffic and Motor Vehicle Safety Act (15 USC 1392, 1407, 1421, 1422) and the delegations of authority at 49 CFR 1.51 and 49 CFR 501.8.

Issued on July 27, 1972.

Robert L. Carter  
Associate Administrator for  
Motor Vehicle Programs

**37 F.R. 15430  
August 2, 1972**



**PREAMBLE TO AMENDMENT TO  
APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109**

**New Pneumatic Tires, Tire Selection and Rims for Passenger Cars**

**(Docket No. 72-18; Notice 2)**

The NHTSA published on August 2, 1972 (37 F.R. 15430), additions and amendments to the tables in the Appendices of Motor Vehicle Safety Standard No. 109 (49 CFR 571.109) and Motor Vehicle Safety Standard No. 110 (49 CFR 571.110). Guidelines published in the *Federal Register* on October 5, 1968 (33 F.R. 14964), provide that routine additions to the Tables become effective 30 days from the publication date if no objections are received. If objections are received, rulemaking pursuant to 49 CFR Part 553 is initiated.

The European Tyre and Rim Technical Association (E.T.A.T.O.) has raised an objection to changes made by the August 2 publication to load values in Table I-H of Standard No. 109. Accordingly, the amendment to Table I-H, Appendix A, Motor Vehicle Safety Standard No. 109 (571.109), published August 2, 1972 (item

3, page 15430), is hereby revoked. Notice of proposed rulemaking regarding these load values will be issued. The other amendments issued in the publication of August 2, 1972, will become effective if no further objections are received by September 1, 1972.

This notice is issued pursuant to sections 103, 119, 201, and 202 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1407, 1421, and 1422) and the delegations of authority at 49 CFR 1.51, 49 CFR 501.8.

Issued on August 29, 1972.

Robert L. Carter  
Associate Administrator  
Motor Vehicle Programs

**37 F.R. 17837  
September 1, 1972**



**PREAMBLE TO AMENDMENT TO  
APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109**

**New Pneumatic Tires, Tire Selection and Rims for Passenger Cars**

**(Docket No. 72-21; Notice 1)**

This amendment adds certain new tire size designations and accompanying values and amends values for existing tire size designations in Motor Vehicle Safety Standard No. 109 (49 CFR § 571.109), and adds alternative rim sizes and test rims to Motor Vehicle Safety Standard No. 110 (49 CFR § 571.110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be added to Appendix A, Standard No. 109, and to Appendix A, Standard No. 110. Under these guidelines the additions become effective 30 days from the date of publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking pursuant to the procedures for motor vehicle safety standards (49 CFR Part 533) is followed. An amendment to the tables was published on August 2, 1972 (37 F.R. 15430). This notice adds tire size designations inadvertently omitted

and corrects certain errors made in that publication. It also adds a new tire size designation on which a petition was received after August 2, 1972.

Accordingly, Appendix A of Motor Vehicle Safety Standard No. 109 (49 CFR § 571.109), and Appendix A of Motor Vehicle Safety Standard No. 110 (49 CFR § 571.110), are amended . . .  
Effective: October 15, 1972

(Sec. 103, 119, 201, 202, National Traffic and Motor Vehicle Safety Act. 15 U.S.C. 1392, 1407, 1421, 1422 delegations of authority at 49 CFR 1.51, 49 CFR 501.8)

Issued on September 8, 1972.

Robert L. Carter  
Associate Administrator  
Motor Vehicle Programs

**37 F.R. 18733  
September 15, 1972**



**PREAMBLE TO AMENDMENT TO  
APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109**

**New Pneumatic Tires, Tire Selection and Rims for Passenger Cars**

**(Docket No. 72-18; Notice 3)**

The NHTSA published on August 2, 1972 (37 F.R. 15430), additions and amendments to the Tables in the Appendices of Motor Vehicle Safety Standard No. 109 (49 CFR § 571.109) and Motor Vehicle Safety Standard No. 110 (49 CFR § 571.110). Guidelines published in the *Federal Register* on October 5, 1968 (33 F.R. 14964), provide that routine additions to the Tables become effective 30 days from the publication date if no objections are received. If objections are received, rulemaking pursuant to 49 CFR Part 553 is initiated.

The Rubber Manufacturers' Association (R.M.A.) and the B.F. Goodrich Tire Company have raised an objection to the change made by the August 2 publication to Footnote 1, Table I-R of Standard No. 109, which would have allowed the letters "HR", "SR", or "VR" to be included in any tire size designation adjacent to or in

place of the dash. Accordingly, the amendment to Footnote 1, Table I-R of Appendix A, Motor Vehicle Safety Standard No. 109 (571.109), published August 2, 1972 (Item 17, page 15432), is hereby revoked. Notice of proposed rulemaking regarding this change will be issued before the rule is amended.

This notice is issued pursuant to sections 103, 119, 201, and 202 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1407, 1421, and 1422) and the delegations of authority at 49 CFR 1.51, 49 CFR 501.8.

Issued on September 14, 1972.

Elwood T. Driver  
Acting Associate Administrator  
Motor Vehicle Programs

**37 F.R. 19138  
September 19, 1972**



**PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109****New Pneumatic Tires—Passenger Cars****(Docket No. 72-25; Notice 1)**

This amendment adds certain tire size designations to Motor Vehicle Safety Standard No. 109 (49 CFR 571.109) and adds alternative rim sizes and test rims to Motor Vehicle Safety Standard No. 110 (49 CFR 571.110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be made to Appendix A, Standard No. 109, and to Appendix A, Standard No. 110. Under these guidelines the additions become effective 30 days from the date of publication in the *Federal Register*, if no objections are received. If objections are received, rule-making pursuant to the procedures for motor vehicle safety standards (49 CFR Part 553) is followed.

Accordingly, Appendix A of Motor Vehicle Safety Standard No. 109 (49 CFR 571.109), and Appendix A of Motor Vehicle Safety Standard No. 110 (49 CFR 571.110), are amended, subject to the 30-day provision indicated above . . . .

This notice is issued pursuant to sections 103, 119, 201 and 202 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 USC 1392, 1407, 1421, 1422) and the delegation of authority of 49 CFR 1.51 and 40 CFR 501.8.

Issued on October 16, 1972.

Robert L. Carter  
Associate Administrator

**37 F.R. 22620**

**October 20, 1972**



**PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109****New Pneumatic Tires—Passenger Cars****(Docket No. 73-7; Notice 1)**

This amendment adds certain tire size designations to Federal Motor Vehicle Safety Standard No. 109 (49 CFR 571.109) and adds alternative rim sizes and test rims to Federal Motor Vehicle Safety Standard No. 110 (49 CFR 571.110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be made to Appendix A, Standard No. 109, and to Appendix A, Standard No. 110. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of Federal Motor Vehicle Safety Standard No. 109 (49 CFR 571-

109), and Appendix A of Federal Motor Vehicle Safety Standard No. 110 (49 CFR 571.110), are amended, subject to the 30 day provision indicated above, as specified below.

Effective date: April 30, 1973, if objections are not received.

(Sec. 103, 119, 201, and 202, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421, and 1422; delegations of authority 49 CFR 1.51, 49 CFR 501.8)

Issued on March 26, 1973.

Robert L. Carter  
Associate Administrator  
Motor Vehicle Programs

**38 F.R. 8514**  
**April 3, 1973**



**PREAMBLE TO AMENDMENT TO APPENDIX A  
MOTOR VEHICLE SAFETY STANDARD NO. 109**

**New Pneumatic Tires—Passenger Cars**

**(Docket No. 73-18; Notice 1)**

This amendment adds certain tire size designations to Federal Motor Vehicle Safety Standard No. 109 (49 CFR 571.109) and adds alternative rim sizes and test rims to Federal Motor Vehicle Safety Standard No. 110 (49 CFR 571.110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be made to Appendix A, Standard No. 109, and to Appendix A, Standard No. 110. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rule-making procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of Federal Motor Vehicle Safety Standard No. 109 (49 CFR 571.109), and Appendix A, of Federal Motor Vehicle Safety Standard No. 110 (49 CFR 571.110), are amended, subject to the 30 day provision indicated above. . . .

Effective date: August 2, 1973, if objections are not received.

(Secs. 103, 119, 201, and 202, Public Law 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421, and 1422; delegation of authority at 38 F.R. 12147)

Issued on June 26, 1973.

James E. Wilson  
Associate Administrator  
Traffic Safety Programs

**38 F.R. 17842  
July 5, 1973**



**PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR  
VEHICLE SAFETY STANDARD NO. 109**

**New Pneumatic Tires—Passenger Cars**

**(Docket No. 73-23; Notice 1)**

This amendment adds certain tire size designations to 49 CFR § 571.109 (Federal Motor Vehicle Safety Standard No. 109) and adds alternative and test rim sizes to 49 CFR § 571.110 (Federal Motor Vehicle Safety Standard No. 110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be made to Appendix A, § 571.109, and to Appendix A, § 571.110. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rule making procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR § 571.109 and Appendix A of 49 CFR § 571.110 are amended, subject to the 30-day provision indicated above.

Effective date: November 9, 1973, if objections are not received.

(Sections 103, 119, 201, and 202, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421, and 1422; delegations of authority at 49 CFR § 1.51 and 49 CFR § 501.8.)

Issued on October 3, 1973.

Robert L. Carter  
Associate Administrator  
Motor Vehicle Programs

**38 F.R. 28569**

**October 15, 1973**



**PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE  
SAFETY STANDARD NO. 109**

(Docket No. 74-6; Notice 1)

This amendment adds certain tire size designations and corrects certain tire size criteria in 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109). It also adds alternative and test rim sizes to 49 CFR 571.110 (Federal Motor Vehicle Safety Standard No. 110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be made to Appendix A, § 571.109 and to Appendix A, § 571.110. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR § 571.109 and Appendix A of 49 CFR § 571.110 are

amended, subject to the 30-day provision indicated above . . . .

Effective date: March 7, 1974, if objections are not received.

(Secs. 103, 119, 201 and 202, Pub. L. 89-563; 80 Stat. 718; 15 U.S.C. 1392, 1407, 1421, and 1422; delegations of authority at 49 CFR § 1.51 and 49 CFR § 501.8.)

Issued on January 30, 1974.

Robert L. Carter  
Associate Administrator  
Motor Vehicle Programs

**39 F.R. 4664**  
**February 6, 1974**



**PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE  
SAFETY STANDARD NO. 109**

**(Docket No. 74-17; Notice 1)**

This amendment adds certain tire size designations to 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109) and adds alternative and test rim sizes to 49 CFR 571.110 (Federal Motor Vehicle Safety Standard No. 110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be made to Appendix A, § 571.109 and to Appendix A, § 571.110. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR § 571.109 and Appendix A of 49 CFR § 571.110 are

amended, subject to the 30-day provision indicated above . . . .

Effective date: May 22, 1974, if objections are not received.

(Secs. 103, 119, 201 and 202, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421 and 1422; delegations of authority at 49 CFR § 1.51 and 49 CFR § 501.8.)

Issued on April 16, 1974.

Robert L. Carter  
Associate Administrator  
Motor Vehicle Programs

**39 F.R. 14595  
April 25, 1974**



**PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE  
SAFETY STANDARD NO. 109**

**(Docket No. 74-26; Notice 1)**

This amendment adds certain tire size designations to 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109) and adds alternative and test rim sizes to 49 CFR 571.110 (Federal Motor Vehicle Safety Standard No. 110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions could be made to Appendix A, § 571.109 and to Appendix A, § 571.110. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR § 571.109 and Appendix A of 49 CFR § 571.110 are

amended, subject to the 30-day provision indicated above . . . .

Effective date: August 19, 1974, if objections are not received.

(Secs. 103, 119, 201 and 202, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421 and 1422; delegations of authority at 49 CFR 1.51 and 49 CFR 501.8.)

Issued on July 11, 1974.

Francis Armstrong  
Acting Associate Administrator  
Motor Vehicle Programs

**39 F.R. 26404  
July 19, 1974**



**PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109****New Pneumatic Tires****(Docket No. 74-38; Notice 1)**

This amendment adds tire load ratings to 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109) and adds alternative rim sizes to 49 CFR 571.110 (Federal Motor Vehicle Safety Standard No. 110).

On October 5, 1968, guidelines were published in the *Federal Register* (33 F.R. 14964) by which routine additions would be made to Appendix A, § 571.109 and to Appendix A, § 571.110. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR § 571.109 and Appendix A of 49 CFR § 571.110 are amended, subject to the 30-day provision indicated above . . . .

*Effective date:* November 21, 1974, if objections are not received.

(Secs. 103, 119, 201 and 202, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421 and 1422; delegations of authority at 49 CFR 1.51 and 49 CFR 501.8.)

Issued on October 16, 1974.

Robert L. Carter  
Associate Administrator  
Motor Vehicle Programs  
**39 F.R. 37489**  
**October 22, 1974**



## PREAMBLE TO AMENDMENT TO APPENDIX A MOTOR VEHICLE SAFETY STANDARD NO. 109

## New Pneumatic Tires

(Docket No. 75-1; Notice 1)

This amendment adds certain tire size designations to 49 CFR 571.109 (Federal Motor Vehicle Safety Standard No. 109) and adds alternative and test rim sizes to 49 CFR 571.110 (Federal Motor Vehicle Safety Standard No. 110).

Guidelines were published in the *Federal Register* October 5, 1968 (33 F.R. 14964), and amended August 13, 1974 (39 F.R. 28980), specifying procedures by which routine additions are made to Appendix A, § 571.109 and to Appendix A, § 571.110. Under these guidelines the additions become effective 30 days from publication in the *Federal Register*, if no objections are received. If objections are received, rulemaking procedures for the issuance of motor vehicle safety standards (49 CFR Part 553) are followed.

Accordingly, Appendix A of 49 CFR §571.109 and Appendix A of 49 CFR § 571.110 are amended, subject to the 30-day provision indicated above . . . .

*Effective date:* February 24, 1975, if objections are not received.

(Secs. 103, 119, 201 and 202, Pub. L. 89-563, 80 Stat. 15 U.S.C. 1392, 1407, 1421 and 1422; delegations of authority at 49 CFR § 1.51 and 49 CFR § 501.8.)

Issued on January 17, 1975.

Robert L. Carter  
Associate Administrator  
Motor Vehicle Programs

**40 F.R. 3597**  
**January 23, 1975**



## APPENDIX A—FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 109

TABLE I-A

## TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR CONVENTIONAL AND LOW SECTION HEIGHT BIAS PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)												Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)	
	16	18	20	22	24	26	28	30	32	34	36	38				40
6.00-13			770	820	860	900	930	970	1,010	1,040	1,080	1,110	1,140	4	29.37	6.00
6.60-13			890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	4½	30.75	6.60
7.00-13			980	1,030	1,080	1,130	1,180	1,230	1,270	1,310	1,360	1,400	1,440	5	31.88	7.10
6.00-14			840	900	930	980	1,020	1,060	1,100	1,130	1,170	1,210	1,240	4	30.64	6.10
6.45-14			860	910	960	1,000	1,040	1,080	1,120	1,160	1,200	1,240	1,270	4½	30.92	6.60
6.60-14			930	990	1,030	1,080	1,130	1,170	1,210	1,250	1,300	1,330	1,370	4	31.75	6.60
6.95-14			950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,310	1,350	1,390	5	31.96	7.00
7.00-14			1,030	1,100	1,140	1,190	1,240	1,290	1,340	1,380	1,430	1,470	1,520	5	32.88	7.10
7.35-14			1,040	1,100	1,160	1,210	1,260	1,310	1,360	1,400	1,450	1,490	1,540	5	32.92	7.30
7.60-14			1,150	1,230	1,280	1,340	1,390	1,450	1,500	1,550	1,600	1,650	1,700	5½	34.19	7.65
7.75-14			1,150	1,210	1,270	1,330	1,390	1,440	1,500	1,550	1,600	1,650	1,690	5½	34.09	7.76
8.00-14			1,240	1,320	1,380	1,440	1,500	1,560	1,620	1,670	1,730	1,780	1,830	6	35.17	8.10
8.25-14			1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,670	1,730	1,780	1,830	6	35.11	8.20
8.50-14			1,330	1,420	1,480	1,550	1,610	1,670	1,740	1,790	1,850	1,910	1,960	6	35.91	8.35
8.65-14			1,360	1,430	1,510	1,580	1,640	1,710	1,770	1,830	1,890	1,950	2,000	6	36.06	8.60
8.85-14			1,430	1,510	1,580	1,660	1,730	1,790	1,860	1,920	1,990	2,050	2,100	6½	36.82	8.95
9.00-14			1,430	1,510	1,580	1,660	1,730	1,790	1,860	1,920	1,990	2,050	2,100	6½	36.91	8.80
9.50-14			1,540	1,640	1,700	1,780	1,850	1,930	2,000	2,060	2,130	2,200	2,260	4	37.74	9.05
6.00-15			890	940	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	6	31.64	6.10
6.50-15			980	1,040	1,080	1,130	1,180	1,230	1,270	1,320	1,360	1,400	1,440	4½	32.75	6.60
6.70-15			1,110	1,190	1,230	1,290	1,340	1,400	1,450	1,500	1,550	1,590	1,640	4½	33.95	7.00
6.85-15			950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,390	5	32.48	6.90
7.00-16	1,170	1,240	1,310	1,380	1,450	1,515	1,580	1,640	1,700	1,760	1,820	1,870	1,930	5	36.02	7.35
7.10-16			1,190	1,270	1,320	1,380	1,440	1,500	1,550	1,600	1,660	1,710	1,760	5	34.89	7.40
7.35-16			1,070	1,130	1,180	1,240	1,290	1,340	1,390	1,440	1,480	1,530	1,570	5½	33.86	7.60
7.60-16			1,310	1,400	1,450	1,520	1,580	1,640	1,710	1,760	1,820	1,880	1,930	5½	36.05	7.90
7.75-16			1,150	1,210	1,270	1,330	1,380	1,440	1,490	1,540	1,590	1,640	1,690	5½	34.53	7.65
8.00-16			1,380	1,470	1,530	1,600	1,670	1,730	1,800	1,860	1,920	1,980	2,040	6	36.84	8.30
8.15-16			1,240	1,300	1,370	1,430	1,490	1,550	1,610	1,660	1,720	1,770	1,820	6	35.50	8.15
8.20-16			1,470	1,570	1,630	1,710	1,780	1,850	1,920	1,980	2,050	2,110	2,170	6	37.50	8.50
8.25-16	1,030	1,190	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,670	1,730	1,780	1,830	6	36.67	8.20
8.45-16			1,340	1,410	1,480	1,550	1,620	1,680	1,740	1,800	1,860	1,920	1,970	6	36.37	8.36
8.55-16	1,220	1,290	1,360	1,430	1,510	1,580	1,640	1,710	1,770	1,830	1,890	1,950	2,000	6	36.57	8.45
8.85-16			1,430	1,510	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6½	37.29	8.80
8.90-16			1,700	1,810	1,880	1,970	2,050	2,130	2,210	2,290	2,360	2,430	2,500	6½	39.54	9.30
9.00-16			1,460	1,540	1,620	1,690	1,760	1,830	1,900	1,970	2,030	2,090	2,150	6	37.45	8.60
9.15-16			1,510	1,600	1,680	1,750	1,830	1,900	1,970	2,030	2,100	2,160	2,230	6½	37.92	9.05
5.00-16	715	765	815	860	910	975	990	1,030	1,070	1,110	1,150	1,185	1,220	3	31.03	5.15
6.00-16			1,075	1,135	1,195	1,250	1,300	1,350	1,400	1,450	1,500			4	34.17	6.26
6.50-16	1,090	1,150	1,215	1,280	1,345	1,405	1,465	1,525	1,580	1,635	1,690	1,740	1,790	4½	35.59	6.80
6.70-16		1,185	1,240	1,300	1,355	1,410	1,465	1,525	1,580	1,635	1,690	1,740	1,795	4½	35.60	7.40
7.00-16			1,365	1,440	1,515	1,585	1,650	1,715	1,780	1,840	1,900			5	37.02	7.35
7.50-16			1,565	1,650	1,735	1,810	1,890	1,960	2,035	2,105	2,175			5½	38.78	8.00
6.50-17		1,215	1,275	1,330	1,390	1,450	1,500	1,560	1,620	1,680	1,740	1,795	1,850	5	37.00	7.60
L84-15			1,510	1,600	1,680	1,750	1,830	1,900	1,970	2,030	2,100	2,160	2,230	6	37.88	8.66

<sup>1</sup>The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".<sup>2</sup>Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-B

TIRE LOAD RATIOS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "70 SERIES" BIAS PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width <sup>2</sup> (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
A70-13.....	720	770	810	860	900	940	980	1,020	1,060	1,090	1,130	1,160	1,200	5½	30.27	7.30
B70-13.....	780	840	890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	5	30.86	7.35
C70-13.....	840	890	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,400	5½	31.68	7.80
D70-13.....	890	950	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5½	32.34	8.00
D70-14.....	890	950	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5½	32.81	7.85
E70-14.....	950	1,010	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	5½	33.45	8.05
F70-14.....	1,020	1,090	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	5½	34.16	8.30
G70-14.....	1,100	1,180	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6	35.18	8.75
H70-14.....	1,200	1,290	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	6	36.19	9.10
J70-14.....	1,260	1,350	1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6½	36.87	9.60
L70-14.....	1,340	1,430	1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	6½	37.62	9.76
A70-15.....	720	770	810	860	900	940	980	1,020	1,060	1,090	1,130	1,160	1,200	4½	30.99	6.60
C70-15.....	840	890	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,390	5½	32.75	7.50
D70-15.....	890	950	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5½	33.37	7.70
E70-15.....	950	1,010	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	6	34.13	8.10
F70-15.....	1,020	1,090	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	6	34.89	8.36
G70-15.....	1,100	1,180	1,260	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6	35.66	8.60
H70-15.....	1,200	1,290	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	6	36.64	8.96
J70-15.....	1,260	1,350	1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6½	37.36	9.35
K70-15.....	1,290	1,380	1,460	1,540	1,620	1,690	1,770	1,830	1,900	1,970	2,030	2,090	2,150	6½	37.66	9.40
L70-15.....	1,340	1,430	1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	6½	38.09	9.60

<sup>1</sup>The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".  
<sup>2</sup>Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-C

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR BIAS PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width <sup>2</sup> (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
<b>"Super Balloon" Sizes</b>																
4.80-10.....	320	355	390	430	470	490	510	535	555	575	595	-----	-----	3½	23.90	6.00
5.20-10.....	350	395	440	485	530	555	575	605	625	650	670	695	715	3½	24.84	5.20
5.90-10.....	385	430	475	515	550	580	605	630	650	675	700	-----	-----	4	24.00	5.80
5.20-12.....	395	445	495	545	595	625	655	685	710	735	760	785	810	3½	26.79	5.20
5.60-12.....	460	520	575	620	670	715	760	795	825	855	885	915	940	4	27.83	5.71
5.90-12.....	460	505	550	595	640	665	700	730	755	785	810	-----	-----	4	26.00	5.90
6.20-12.....	505	555	605	655	705	735	775	805	835	865	895	-----	-----	4½	27.00	6.30
5.20-13.....	430	485	540	590	640	670	710	740	765	795	820	850	875	3½	27.72	5.20
5.60-13.....	495	560	620	675	725	770	810	850	880	910	945	975	1,005	4	28.92	5.71
5.90-13.....	555	625	695	755	815	860	895	935	970	1,005	1,040	1,075	1,105	4	29.74	5.91
6.20-13.....	520	580	640	700	750	780	820	850	880	910	945	-----	-----	4½	28.00	6.30
6.40-13.....	630	705	785	845	915	945	985	1,025	1,060	1,100	1,140	1,175	1,210	4½	31.26	6.42
6.70-13.....	690	775	860	935	1,000	1,045	1,090	1,135	1,175	1,220	1,260	1,305	1,340	4½	32.14	6.69
6.90-13.....	695	745	795	845	915	955	1,005	1,045	1,085	1,120	1,160	-----	-----	5	30.00	7.20
5.20-14.....	475	535	595	645	695	735	785	825	855	885	915	945	975	3½	28.89	5.20
5.60-14.....	530	595	660	715	770	815	855	890	920	955	990	1,020	1,050	4	29.94	5.71
5.90-14.....	585	660	730	785	850	880	925	970	1,005	1,040	1,080	1,115	1,145	4	30.76	5.91
6.40-14.....	660	745	825	890	960	1,000	1,050	1,090	1,130	1,170	1,210	1,250	1,290	4½	32.19	6.42
6.45-14.....	-----	-----	860	910	960	1,000	1,040	1,080	1,120	-----	-----	-----	-----	4½	30.92	6.60
5.20-15.....	505	570	630	685	740	780	830	870	900	935	965	1,000	1,030	3½	29.75	5.20
6.60-15.....	555	625	695	755	815	860	895	935	970	1,005	1,040	1,075	1,105	4	30.87	5.71
5.90-16.....	615	695	770	825	890	935	980	1,015	1,050	1,090	1,130	1,165	1,200	4	31.77	5.91
6.40-15.....	-----	-----	875	950	1,010	1,055	1,100	1,150	1,190	1,230	1,260	-----	-----	4½	33.20	6.42

<sup>1</sup>The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".  
<sup>2</sup>Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-C—Continued  
TIRE LOAD RATIOS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR BIAS PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)												Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)	
	16	18	20	22	24	26	28	30	32	34	36	38				40
<b>"Low Section" Sizes</b>																
5.00-12.....	370	420	465	505	540	565	580	605	625	650	670	695	715	3½	25.62	5.04
5.50-12.....	415	470	520	560	605	635	665	695	720	745	770	800	820	4	26.93	5.59
6.00-12.....	485	545	605	655	705	735	785	815	845	875	905	935	965	4½	28.33	6.14
5.00-13.....	410	460	510	545	585	610	635	660	685	710	735	755	780	3½	26.64	5.04
5.50-13.....	445	495	550	595	640	670	710	740	765	795	820	850	875	4	27.95	5.69
7.25-13.....	730	825	915	990	1,070	1,110	1,160	1,200	1,245	1,290	1,335	1,380	1,420	5	32.51	7.24
7.50-13.....	775	875	970	1,040	1,120	1,180	1,225	1,270	1,315	1,365	1,410	1,460	1,500	5½	33.22	7.48
5.50-16L.....	505	570	630	675	725	760	800	840	870	900	935	965	995	4	29.97	5.59
6.00-16L.....	595	665	740	800	860	890	930	970	1,005	1,040	1,080	1,115	1,145	4½	31.29	6.14
6.50-16L.....	675	755	840	900	970	1,010	1,060	1,105	1,145	1,185	1,230	1,270	1,305	4½	32.68	6.54
7.00-16L.....	760	855	950	1,025	1,100	1,145	1,190	1,235	1,280	1,325	1,375	1,420	1,460	5	33.85	7.01
<b>"Super Low Section" Sizes</b>																
145-10/5.95-10.....	380	430	475	515	550	580	605	630	650	675	700	725	745	4	24.76	5.79
125-12/5.35-12.....	335	380	420	450	485	510	535	550	570	590	610	630	650	3½	24.68	5.00
135-12/5.65-12.....	370	420	465	505	540	570	590	620	640	665	690	710	730	4	25.53	5.39
145-12/5.95-12.....	440	495	550	595	640	665	700	730	755	785	810	840	865	4	26.69	5.79
165-12/6.15-12.....	485	545	605	655	705	735	775	805	835	865	895	925	950	4½	27.36	6.18
135-13/5.65-13.....	415	470	520	555	595	625	655	685	710	735	760	785	810	4	26.53	5.39
145-13/5.95-13.....	470	525	585	620	670	705	745	770	800	825	855	885	910	4	27.61	5.79
155-13/6.15-13.....	515	575	640	700	750	780	820	850	880	910	945	975	1,005	4½	28.44	6.18
165-13/6.45-13.....	575	645	715	770	825	865	905	935	970	1,005	1,040	1,075	1,105	4½	29.52	6.67
175-13/6.95-13.....	635	715	795	845	915	955	1,005	1,045	1,085	1,120	1,160	1,200	1,235	5	30.34	7.01
185-13/7.35-13.....	695	785	870	945	1,010	1,060	1,115	1,160	1,205	1,245	1,290	1,335	1,370	5½	31.41	7.40
135-14/5.65-14.....	440	495	550	595	640	665	700	730	765	785	810	840	865	4	27.54	5.59
145-14/5.95-14.....	495	560	620	665	715	750	785	815	845	875	905	935	965	4	28.54	5.79
155-14/6.15-14.....	540	610	675	730	780	825	860	895	925	960	995	1,030	1,060	4½	29.46	6.18
125-15/5.35-16.....	395	445	495	535	570	600	625	650	675	700	720	745	770	3½	27.69	5.00
135-15/5.65-15.....	460	520	575	610	660	690	720	750	775	805	835	860	885	4	28.53	5.39
145-15/5.95-15.....	520	585	650	710	760	790	830	860	890	925	955	985	1,015	4	29.54	5.79
155-15/6.35-15.....	585	660	730	780	835	875	915	950	985	1,020	1,055	1,090	1,125	4½	30.45	6.18
175-16/7.15-15.....	705	795	880	955	1,020	1,070	1,125	1,170	1,215	1,255	1,300	1,345	1,385	5	32.42	7.01
165-14.....	650	715	770	815	880	925	970	1,000	1,035	1,080	1,115	1,145	1,170	4½	31.22	6.57
175-14.....	715	780	850	915	980	1,025	1,070	1,115	1,160	1,200	1,235	1,270	1,310	5	32.13	7.01
185-14.....	805	870	940	1,000	1,080	1,135	1,190	1,235	1,290	1,325	1,370	1,400	1,435	5½	33.15	7.40
195-14.....	860	950	1,025	1,105	1,180	1,235	1,290	1,345	1,400	1,445	1,490	1,535	1,580	5½	34.18	7.80
205-14.....	940	1,025	1,115	1,190	1,270	1,335	1,400	1,455	1,510	1,565	1,610	1,655	1,700	6	34.84	8.19
215-14.....	1,015	1,115	1,200	1,290	1,380	1,445	1,520	1,590	1,640	1,700	1,740	1,785	1,830	6	35.75	8.58
225-14.....	1,080	1,180	1,280	1,380	1,465	1,540	1,620	1,700	1,750	1,810	1,850	1,915	1,970	6½	36.69	8.98
165-15.....	685	750	805	860	915	970	1,015	1,060	1,105	1,135	1,180	1,200	1,235	4½	31.73	6.67
185-15.....	815	905	970	1,050	1,115	1,180	1,235	1,280	1,325	1,370	1,410	1,445	1,490	5½	33.59	7.40
195-15.....	880	970	1,060	1,135	1,215	1,280	1,335	1,390	1,445	1,490	1,535	1,580	1,620	5½	34.61	7.80
205-16.....	970	1,060	1,145	1,225	1,300	1,370	1,445	1,500	1,565	1,610	1,665	1,720	1,765	6	35.79	8.19
215-15.....	1,050	1,145	1,235	1,335	1,435	1,500	1,590	1,640	1,700	1,740	1,800	1,850	1,910	6	37.24	8.58
235-15.....	1,150	1,295	1,435	1,545	1,660	1,735	1,825	1,895	1,965	2,035	2,110	2,180	2,245	6½	38.26	9.37
5.0-15.....	460	520	575	610	660	690	720	750	775	805	835	860	885	4	28.53	5.39
5.5-15.....	520	585	650	710	760	790	830	860	890	925	955	985	1,015	4	29.54	5.79

<sup>1</sup>The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".

<sup>2</sup>Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-D

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR DASH (—) RADIAL PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)												Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)	
	16	18	20	22	24	26	28	30	32	34	36	38				40
145-10	495	525	545	565	585	605	625	640	655	670	685	700	710	4	24.76	5.79
125-12	405	430	445	465	480	495	505	525	535	550	560	575	580	3½	24.68	5.00
135-12	480	510	530	550	565	585	600	620	635	650	665	675	685	4	25.53	5.39
145-12	570	605	625	650	675	695	715	740	760	775	790	805	816	4	26.69	5.79
155-12	630	670	695	720	745	770	795	820	840	860	875	890	905	4½	27.36	6.18
135-13	515	545	565	590	610	630	650	670	690	705	715	730	740	4	26.53	5.39
145-13	605	640	665	695	720	740	765	790	815	830	845	855	870	4	27.61	5.79
155-13	670	710	735	765	790	815	840	870	895	910	925	940	955	4½	28.44	6.18
165-13	700	750	800	850	890	930	970	1,010	1,050	1,090	1,130	1,170	1,200	4½	29.52	6.57
175-13			810	860	920	980	1,040	1,100	1,150	1,200	1,240	1,300	1,350	4½	30.30	6.75
185-13			870	940	1,010	1,080	1,140	1,210	1,270	1,330	1,390	1,450	1,510	5	31.42	7.25
195-13			970	1,040	1,110	1,180	1,250	1,320	1,400	1,450	1,520	1,580	1,640	5½	32.38	7.70
135-14	555	585	610	635	655	675	695	720	740	750	765	780	790	4	27.54	5.39
145-14	645	680	710	735	760	785	810	840	865	885	905	920	935	4	28.54	5.79
155-14	630	680	720	760	800	840	880	920	950	980	1,010	1,040	1,070	4½	29.45	6.18
165-14	740	790	840	890	940	980	1,020	1,060	1,100	1,140	1,180	1,220	1,250	4½	30.53	6.57
175-14			830	900	960	1,030	1,100	1,160	1,230	1,280	1,350	1,400	1,470	5	31.63	7.00
185-14			920	1,000	1,070	1,140	1,220	1,290	1,360	1,420	1,500	1,560	1,640	5	32.69	7.30
195-14			1,020	1,100	1,180	1,270	1,340	1,420	1,500	1,570	1,650	1,720	1,800	5½	33.69	7.80
205-14			1,100	1,180	1,270	1,380	1,350	1,540	1,620	1,700	1,770	1,860	1,940	6	34.82	8.80
215-14			1,200	1,300	1,390	1,510	1,580	1,670	1,770	1,850	1,920	2,010	2,100	6	35.79	8.60
225-14			1,320	1,420	1,510	1,610	1,710	1,800	1,900	1,970	2,050	2,150	2,230	6½	36.44	8.95
125-15	495	525	545	565	585	605	625	640	655	670	685	700	710	3½	27.69	5.00
135-15	585	620	645	670	695	715	735	755	775	795	810	825	840	4	28.53	5.39
145-15	680	720	750	780	805	830	855	875	895	920	940	960	975	4	29.54	5.79
155-15	740	785	815	850	880	905	930	955	980	1,005	1,025	1,045	1,060	4½	30.45	6.18
165-15	770	820	870	920	970	1,020	1,070	1,110	1,150	1,190	1,230	1,270	1,310	4½	31.45	6.57
175-15			990	1,050	1,100	1,150	1,200	1,250	1,300	1,350	1,400	1,440	1,480	5	32.41	7.00
180-15	925	980	1,020	1,060	1,095	1,130	1,170	1,190	1,230	1,260	1,280	1,305	1,325	4½	32.04	6.62
185-15			1,000	1,070	1,140	1,210	1,280	1,350	1,420	1,480	1,540	1,600	1,660	5½	33.58	7.45
195-15			1,080	1,160	1,240	1,330	1,400	1,470	1,550	1,620	1,680	1,760	1,820	5½	34.22	7.65
205-15			1,190	1,280	1,370	1,450	1,530	1,620	1,700	1,760	1,840	1,920	2,000	6	35.20	8.10
215-15			1,280	1,380	1,480	1,570	1,660	1,760	1,860	1,940	2,020	2,100	2,200	6	36.00	8.35
220-15			1,320	1,420	1,520	1,610	1,695	1,785	1,875	1,960	2,050	2,135	2,225	6	36.49	8.35
225-15			1,370	1,470	1,580	1,670	1,780	1,880	1,980	2,060	2,150	2,240	2,340	6½	36.94	8.80
230-15			1,405	1,515	1,625	1,725	1,825	1,925	2,020	2,110	2,190	2,280	2,360	6½	37.30	8.80
235-16			1,430	1,540	1,640	1,750	1,850	1,960	2,060	2,160	2,250	2,350	2,450	6½	37.75	9.05
240-15			1,455	1,570	1,680	1,790	1,890	1,990	2,090	2,190	2,280	2,380	2,480	6½	38.28	9.05
185-16			1,140	1,210	1,270	1,330	1,390	1,450	1,500	1,550	1,600	1,650	1,700	5½	34.14	7.40
165-400	800	860	920	980	1,030	1,080	1,130	1,180	1,220	1,260	1,300	1,340	1,380	4.65	32.04	6.62

<sup>1</sup>The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".

<sup>2</sup>Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-E

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "77 SERIES" BIAS PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)												Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)	
	16	18	20	22	24	26	28	30	32	34	36	38				40
G77-14			1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6	35.04	8.45
5.9-10	385	430	475	515	550	580	605	630	660	675	700			4	24.00	5.80
5.9-12	460	505	550	595	640	665	700	730	755	785	810			4	26.00	5.90
6.2-12	485	545	605	655	705	735	775	805	835	865	895	925	950	4	27.21	6.06
6.2-13	515	575	640	700	750	780	820	850	880	910	945	975	1,005	4	28.19	6.06
6.5-13	575	645	715	770	825	865	905	935	970	1,005	1,040	1,075	1,105	4½	29.18	6.54
6.9-13	635	715	795	845	915	955	1,005	1,045	1,085	1,120	1,160			4½	29.92	6.77
6.2-15	585	660	730	780	835	875	915	950	985	1,020	1,055	1,090	1,125	4	30.17	6.06
6.9-15	705	795	880	955	1,020	1,070	1,125	1,170	1,215	1,255	1,300	1,345	1,385	4½	31.93	6.77

<sup>1</sup>The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".

<sup>2</sup>Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-F

## TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR TYPE "R" RADIAL PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)												Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)	
	16	18	20	22	24	26	28	30	32	34	36	38				40
5.20R10.....	435	460	485	510	535	560	585	615	635	660	685	710	735	3½	24.84	5.20
5.00R12.....	480	495	515	535	555	575	595	615	635	650	670	690	710	3½	25.62	5.04
5.20R12.....	515	540	565	590	615	640	665	695	715	740	765	790	815	3½	26.79	5.20
5.60R12.....	520	545	570	595	620	650	670	705	725	750	775	800	825	4	26.93	5.59
5.60R13.....	600	630	655	685	715	740	770	800	825	850	875	905	930	4	27.83	5.71
5.00R13.....	535	555	575	590	615	630	650	670	690	705	725	745	765	3½	26.64	5.04
5.20R13.....	570	595	620	645	670	695	720	750	770	795	820	845	870	3½	27.72	5.20
5.50R13.....	575	600	625	650	675	695	725	750	775	795	825	850	875	4	27.95	5.59
5.60R13.....	655	685	710	740	765	795	825	855	880	905	935	960	990	4	28.92	5.71
6.00R13.....	675	705	735	760	790	815	845	875	900	925	950	975	1,005	4	29.37	6.00
5.90R13.....	705	780	805	830	860	885	915	940	965	990	1,015	1,045	1,070	4	29.74	5.91
6.40R13.....	810	840	870	905	940	970	1,005	1,040	1,070	1,100	1,135	1,165	1,200	4½	31.26	6.42
6.00R13.....	800	830	860	890	925	960	995	1,030	1,060	1,090	1,120	1,150	1,180	4½	30.75	6.60
6.70R13.....	690	775	860	935	1,000	1,045	1,090	1,135	1,175	1,220	1,260	1,305	1,340	4½	32.14	6.69
7.00R13.....	870	910	950	985	1,025	1,060	1,100	1,145	1,175	1,215	1,255	1,295	1,335	5	31.88	7.10
7.25R13.....	940	980	1,020	1,060	1,100	1,135	1,175	1,215	1,255	1,290	1,330	1,370	1,410	5	32.51	7.24
5.20R14.....	605	640	670	700	730	760	795	830	855	885	915	950	980	3½	28.89	5.20
5.90R14.....	750	785	815	845	875	905	935	970	995	1,025	1,055	1,085	1,115	4	30.76	5.91
7.00R14.....	925	960	1,000	1,040	1,075	1,115	1,155	1,195	1,235	1,270	1,320	1,350	1,380	5	32.88	7.10
7.50R14.....	1,065	1,100	1,140	1,180	1,220	1,260	1,300	1,340	1,380	1,415	1,460	1,500	1,540	5½	34.19	7.65
5.60R15.....	705	780	805	830	860	885	915	940	965	990	1,015	1,045	1,070	4	30.87	5.71
6.40R15.....	885	925	965	1,005	1,040	1,080	1,120	1,160	1,200	1,235	1,275	1,310	1,350	4½	33.26	6.42
6.70R15.....	975	1,015	1,055	1,095	1,130	1,170	1,215	1,255	1,290	1,325	1,365	1,405	1,445	4½	33.95	7.00
7.60R15.....	1,160	1,200	1,245	1,285	1,325	1,370	1,415	1,465	1,500	1,535	1,575	1,610	1,655	5½	36.00	7.90

<sup>1</sup>The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to the "R".<sup>2</sup>Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-G

## TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "70 SERIES" TYPE "R" RADIAL PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)												Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)	
	16	18	20	22	24	26	28	30	32	34	36	38				40
AR70-13.....	720	770	810	860	900	940	980	1,020	1,060	1,090	1,130	1,160	1,200	5	30.04	7.15
BR70-13.....	780	840	890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	5½	31.04	7.60
CR70-13.....	840	890	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,400	5	31.65	7.85
DR70-13.....	890	950	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5½	32.29	8.05
CR70-14.....	840	890	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,400	5½	32.23	7.65
DR70-14.....	890	950	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5½	32.78	7.90
ER70-14.....	950	1,010	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	5½	33.42	8.10
FR70-14.....	1,020	1,090	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	6	34.34	8.55
GR70-14.....	1,100	1,180	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6	35.12	8.85
HR70-14.....	1,200	1,290	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	6½	36.31	9.40
JR70-14.....	1,260	1,350	1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6½	36.86	9.55
LR70-14.....	1,340	1,430	1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	6½	37.69	9.80
DR70-15.....	890	950	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5½	33.34	7.75
ER70-15.....	950	1,010	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	5½	33.91	7.95
FR70-15.....	1,020	1,090	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	6	34.87	8.40
GR70-15.....	1,100	1,180	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6	35.65	8.65
HR70-15.....	1,200	1,290	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	6½	36.83	9.20
JR70-15.....	1,260	1,350	1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6½	37.31	9.40
KR70-15.....	1,290	1,380	1,460	1,540	1,620	1,690	1,770	1,830	1,900	1,970	2,030	2,090	2,150	6½	37.62	9.50
LR70-15.....	1,340	1,430	1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	6½	38.06	9.65
MR70-15.....	1,420	1,520	1,610	1,700	1,780	1,860	1,940	2,020	2,090	2,160	2,230	2,300	2,370	7	38.93	10.15

<sup>1</sup>The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".<sup>2</sup>Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-II  
TIRE LOAD RATIOS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR TYPE "R" RADIAL PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
145R10.....	465	495	525	550	580	605	630	655	680	700	725	750	770	4	24.76	5.79
125R12.....	370	400	430	450	475	495	515	535	555	575	595	610	630	3½	24.68	5.00
135R12.....	440	475	505	535	560	585	610	635	655	680	700	725	745	4	25.53	5.39
145R12.....	530	565	600	635	665	695	725	755	780	810	835	860	885	4	26.69	5.79
155R12.....	590	630	665	700	735	770	800	835	865	895	925	950	980	4½	27.36	6.18
135R13.....	480	515	545	575	600	630	655	680	705	730	755	780	800	4	26.53	5.39
145R13.....	590	630	665	700	735	770	800	835	860	890	920	950	980	4	27.59	5.79
155R13.....	645	690	730	770	810	845	885	915	950	985	1,015	1,045	1,075	4½	28.44	6.18
165R13.....	680	730	770	820	860	900	930	970	1,010	1,040	1,080	1,110	1,140	4½	29.18	6.40
175R13.....	790	840	890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	4½	30.30	6.76
185R13.....	870	930	980	1,030	1,080	1,130	1,180	1,230	1,270	1,310	1,360	1,400	1,440	5	31.42	7.25
195R13.....	955	1,010	1,060	1,110	1,170	1,220	1,280	1,320	1,370	1,420	1,470	1,510	1,550	5½	32.38	7.70
135R14.....	515	550	585	615	645	675	705	730	760	785	810	835	860	4	27.54	6.39
145R14.....	595	635	675	715	750	785	815	850	880	910	940	965	995	4	28.54	5.79
155R14.....	690	740	780	820	860	900	940	970	1,010	1,040	1,080	1,110	1,140	4	29.51	6.05
165R14.....	760	810	860	910	960	1,000	1,040	1,080	1,120	1,160	1,200	1,240	1,270	4½	30.65	6.65
175R14.....	840	900	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,310	1,350	1,390	5	31.63	7.00
185R14.....	920	980	1,040	1,100	1,160	1,210	1,260	1,310	1,360	1,400	1,450	1,490	1,540	5	32.69	7.30
195R14.....	1,020	1,090	1,150	1,210	1,270	1,330	1,390	1,440	1,500	1,550	1,600	1,650	1,690	5½	33.69	7.80
205R14.....	1,110	1,190	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,670	1,730	1,780	1,830	6	34.82	8.30
215R14.....	1,210	1,290	1,360	1,430	1,510	1,580	1,640	1,710	1,770	1,830	1,890	1,950	2,000	6	35.79	8.60
225R14.....	1,270	1,350	1,430	1,510	1,580	1,660	1,730	1,790	1,860	1,920	1,990	2,050	2,100	6½	36.44	8.95
125R15.....	460	490	520	550	575	605	630	655	680	705	725	745	770	3½	27.69	5.00
135R15.....	545	580	615	650	680	715	745	775	800	830	855	880	910	4	28.53	5.39
145R15.....	640	680	720	760	795	830	865	900	935	965	995	1,025	1,055	4	29.64	5.79
155R15.....	690	735	780	825	865	905	940	980	1,015	1,050	1,085	1,115	1,150	4½	30.45	6.18
165R15.....	770	820	870	910	960	1,000	1,050	1,090	1,130	1,170	1,200	1,240	1,270	4½	31.18	6.40
175R15.....	840	900	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,390	5	32.30	6.90
185R15.....	950	1,010	1,070	1,130	1,180	1,240	1,290	1,340	1,390	1,440	1,480	1,530	1,570	5½	33.58	7.45
195R15.....	1,020	1,090	1,150	1,210	1,270	1,330	1,380	1,440	1,490	1,540	1,590	1,640	1,690	5½	34.22	7.65
205R15.....	1,100	1,170	1,240	1,300	1,370	1,430	1,490	1,550	1,610	1,660	1,720	1,770	1,820	6	35.20	8.10
215R15.....	1,190	1,270	1,340	1,410	1,480	1,500	1,620	1,680	1,740	1,800	1,860	1,920	1,970	6	36.00	8.35
225R15.....	1,270	1,350	1,430	1,510	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6½	36.94	8.80
235R15.....	1,340	1,430	1,510	1,600	1,680	1,750	1,830	1,900	1,970	2,030	2,100	2,160	2,230	6½	37.75	9.05
205R16.....	1,100	1,170	1,240	1,300	1,370	1,430	1,490	1,550	1,610	1,660	1,720	1,770	1,820	6	36.52	8.19

<sup>1</sup>The letter "J", "S", or "V" may be included in any specified tire size designation adjacent to the "R".

<sup>2</sup>Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-J

## TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "78 SERIES" BIAS PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)												Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)	
	16	18	20	22	24	26	28	30	32	34	36	38				40
A78-13.....	720	770	810	860	900	940	980	1,020	1,060	1,090	1,130	1,160	1,200	4½	29.74	6.60
B78-13.....	780	840	890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	5	30.72	7.05
C78-13.....	840	890	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,400	5½	31.56	7.45
D78-13.....	890	950	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5½	32.18	7.70
A78-14.....	720	770	810	860	900	940	980	1,020	1,060	1,090	1,130	1,160	1,200	4½	30.31	6.45
B78-14.....	780	840	890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	4½	31.04	6.65
C78-14.....	840	890	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,400	5	31.95	7.05
D78-14.....	890	950	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5	32.52	7.35
E78-14.....	950	1,010	1,070	1,130	1,190	1,240	1,300	1,360	1,400	1,440	1,490	1,540	1,580	5½	33.29	7.65
F78-14.....	1,020	1,090	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	5½	34.04	7.90
G78-14.....	1,100	1,180	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6	35.02	8.35
H78-14.....	1,200	1,290	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	6	36.06	8.70
J78-14.....	1,260	1,350	1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6	36.58	8.80
A78-16.....	720	770	810	860	900	940	980	1,020	1,060	1,090	1,130	1,160	1,200	4½	30.85	6.35
C78-16.....	840	890	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,400	5	32.45	6.95
D78-16.....	890	950	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5	33.05	7.15
E78-16.....	950	1,010	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	5	33.65	7.35
F78-16.....	1,020	1,090	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	5½	34.56	7.70
G78-16.....	1,100	1,180	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	5½	35.36	8.05
H78-16.....	1,200	1,290	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	6	36.50	8.65
J78-16.....	1,260	1,350	1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6	37.02	8.70
L78-16.....	1,340	1,430	1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	6	37.73	8.85
N78-16.....	1,500	1,600	1,700	1,790	1,880	1,970	2,050	2,130	2,210	2,280	2,360	2,430	2,500	7	39.60	9.80

<sup>1</sup> The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".<sup>2</sup> Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-K

## TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "60 SERIES" BIAS PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)												Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)	
	16	18	20	22	24	26	28	30	32	34	36	38				40
A60-13.....	720	770	810	860	900	940	980	1,020	1,060	1,090	1,130	1,160	1,200	5½	30.00	7.86
B60-13.....	780	840	890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	6	30.95	8.35
C60-13.....	840	890	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,400	6	31.58	8.60
D60-13.....	890	950	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	6	32.20	8.85
B60-14.....	780	840	890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	5½	31.26	8.00
D60-14.....	890	950	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	6	32.72	8.65
E60-14.....	950	1,010	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	7	33.69	9.30
F60-14.....	1,020	1,090	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	7	34.44	9.55
G60-14.....	1,100	1,180	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	7	35.23	9.85
H60-14.....	1,200	1,290	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	7	36.20	10.26
J60-14.....	1,260	1,350	1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	7	36.70	10.45
L60-14.....	1,340	1,430	1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	8	37.83	11.10
B60-15.....	780	840	890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	5½	31.85	7.80
C60-15.....	840	890	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,400	6	32.66	8.25
E60-15.....	950	1,010	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	6	33.83	8.70
F60-15.....	1,020	1,090	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	6½	34.75	9.40
G60-15.....	1,100	1,180	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	7	35.73	9.70
H60-15.....	1,200	1,290	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	7	36.70	10.05
J60-15.....	1,260	1,350	1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	7	37.20	10.25
L60-15.....	1,340	1,430	1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	7	37.91	10.50

<sup>1</sup> The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".<sup>2</sup> Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-L

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR SERIES 50 CANTILEVERED SIDEWALL TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)											Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)
	20	22	24	26	28	30	32	34	36	38	40			
E50C-16.....	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	3½	33.31	7.95
F60C-16.....	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	3½	34.04	8.20
G50C-17.....	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	3½	35.34	8.45
H60C-17.....	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	3½	36.30	8.80
L50C-18.....	1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	3½	38.00	9.10

<sup>1</sup>The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".  
<sup>2</sup>Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-M

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "78 SERIES" RADIAL PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
AR78-13.....	720	770	810	860	900	940	980	1,020	1,060	1,090	1,130	1,160	1,200	4½	29.65	6.50
BR78-13.....	780	840	890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	4½	30.31	6.75
CR78-13.....	840	890	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,400	5	31.13	7.15
AR78-14.....	720	770	810	860	900	940	980	1,020	1,060	1,090	1,130	1,160	1,200	4½	30.08	6.40
BR78-14.....	780	840	890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	4½	30.84	6.60
CR78-14.....	840	890	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,400	5	31.67	7.00
DR78-14.....	890	950	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5	32.26	7.20
ER78-14.....	950	1,010	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	5	32.86	7.40
FR78-14.....	1,020	1,090	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	5½	33.78	7.85
GR78-14.....	1,100	1,180	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6	34.78	8.30
HR78-14.....	1,200	1,290	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	6	35.77	8.60
JR78-14.....	1,260	1,350	1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6½	36.47	8.95
AR78-15.....	720	770	810	860	900	940	980	1,020	1,060	1,090	1,130	1,160	1,200	4½	30.66	6.25
BR78-15.....	780	840	890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	4½	31.38	6.45
CR78-15.....	840	890	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,400	5	32.24	6.85
ER78-15.....	950	1,010	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	5½	33.58	7.46
FR78-15.....	1,020	1,090	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	5½	34.28	7.70
GR78-15.....	1,100	1,180	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6	35.30	8.15
HR78-15.....	1,200	1,290	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	6	36.23	8.45
JR78-15.....	1,260	1,350	1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	6½	36.98	8.80
LR78-15.....	1,340	1,430	1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	6½	37.66	9.00
MR78-15.....	1,420	1,520	1,610	1,700	1,780	1,860	1,940	2,020	2,090	2,160	2,230	2,300	2,370	6½	38.35	9.20
NR78-15.....	1,500	1,600	1,700	1,790	1,880	1,970	2,050	2,130	2,210	2,280	2,360	2,430	2,500	7	39.17	9.70

<sup>1</sup>The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".  
<sup>2</sup>Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-N

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "70 SERIES" RADIAL PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)												Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)	
	16	18	20	22	24	26	28	30	32	34	36	38				40
165/70 R 10.....	585	600	615	630	650	665	680	700	715	730	745	760	780	4½	25.50	6.50
145/70 R12.....	500	515	535	550	570	590	605	620	640	660	675	695	710	4	25.50	5.67
175/70 R 12.....			780	805	830	855	880	900	925	950	970	995	1,020	5	28.21	6.92
165/70 R 13.....			750	770	795	815	835	860	880	900	920	940	960	4½	28.45	6.50
175/70 R 13.....			845	865	890	910	935	955	980	1,000	1,025	1,045	1,070	5	29.31	6.92
185/70 R 13.....			940	965	990	1,015	1,040	1,065	1,090	1,115	1,140	1,165	1,190	5	30.39	7.31
195/70 R 13.....			1,045	1,070	1,100	1,125	1,155	1,180	1,210	1,240	1,265	1,290	1,320	5½	31.20	7.74
156/70 R 14.....			700	720	740	760	780	795	815	835	850	870	890	4	28.15	5.93
175/70 R14.....			880	905	925	950	975	1,000	1,025	1,050	1,075	1,100	1,125	5	30.33	6.92
185/70 R 14.....			990	1,015	1,045	1,070	1,100	1,130	1,155	1,180	1,210	1,235	1,265	5	31.39	7.31
195/70 R 14.....			1,090	1,120	1,155	1,185	1,220	1,250	1,280	1,310	1,340	1,375	1,405	5½	32.30	7.74
175/70 R 15.....			940	965	990	1,015	1,040	1,065	1,090	1,115	1,140	1,165	1,190	5	31.36	6.92
185/70 R 16.....	890	915	1,040	1,070	1,100	1,130	1,155	1,180	1,210	1,235	1,265	1,290	1,320	5	32.34	7.31

<sup>1</sup> The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to the "R".

<sup>2</sup> Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-O

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "LOW SECTION" TYPE "R" RADIAL PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)												Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)
	20	22	24	26	28	30	32	34	36	38	40				
140 R 12.....	490	520	550	580	610	640	660	690	710	740	770	4	26.20	6.40	
160 R 12.....	570	610	640	670	700	730	760	790	820	850	880	4	27.19	6.76	
180 R 13.....	600	640	680	720	750	780	810	840	870	900	940	4	28.17	5.76	
160 R 13.....	670	700	740	780	820	860	900	940	980	1,010	1,040	4½	29.23	6.25	
170 R 13.....	720	760	800	840	880	920	960	1,000	1,040	1,080	1,110	5	30.08	6.60	
160 R 14.....	640	670	710	750	780	820	860	900	940	970	1,000	4	29.16	5.76	
180 R 15.....	920	970	1,020	1,070	1,120	1,170	1,230	1,280	1,330	1,380	1,430	5	32.97	6.85	

<sup>1</sup> The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to the "R".

<sup>2</sup> Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-P

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS AND SECTION WIDTHS FOR SERIES 45 CANTILEVERED SIDEWALL TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)												Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)
	20	22	24	26	28	30	32	34	36	38	40				
Q45C-16.....	1,205	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	5	35.53	9.70	

<sup>1</sup> The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".

<sup>2</sup> Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-R

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "60 SERIES" RADIAL PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)												Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)	
	16	18	20	22	24	26	28	30	32	34	36	38				40
AR60-13.....	720	770	810	860	900	940	980	1,020	1,060	1,090	1,130	1,160	1,200	5½	30.00	7.85
BR60-13.....	780	840	890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	6	30.95	8.35
ER60-13.....	950	1,010	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	6	32.81	9.05
AR60-14.....	720	770	810	860	900	940	980	1,020	1,060	1,090	1,130	1,160	1,200	5½	30.54	7.70
FR60-14.....	1,020	1,090	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	6½	34.25	9.35
GR60-14.....	1,100	1,180	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	7	35.24	9.85
LR60-14.....	1,340	1,430	1,520	1,600	1,650	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	8	37.84	11.10
ER60-15.....	950	1,010	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	6	33.84	8.70
FR60-15.....	1,020	1,090	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	6½	34.75	9.20
GR60-15.....	1,100	1,180	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6½	35.52	9.50
HR60-15.....	1,200	1,290	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	7	36.70	10.05
LR60-15.....	1,340	1,430	1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	7	37.91	10.50

<sup>1</sup> The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".

<sup>2</sup> Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-S

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "60 SERIES" RADIAL PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)												Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)	
	16	18	20	22	24	26	28	30	32	34	36	38				40
185/60 R 13.....			780	815	845	880	915	945	980	1,010	1,045	1,075	1,110	5	28.61	7.28
205/60 R13.....	735	785	835	880	925	965	1,005	1,045	1,085	1,120	1,160	1,195	1,230	6	30.41	8.19
205/60 R 14.....	780	840	890	930	990	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	6	31.62	8.13
245/60 R 14.....	1,020	1,090	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	6½	34.25	9.35
265/60 R14.....	1,200	1,290	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	7	36.20	10.25
215/60 R15.....	890	950	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	6	33.25	8.55
255/60 R 15.....	1,200	1,290	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	7	36.70	10.05

<sup>1</sup>The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to the "R".  
<sup>2</sup>Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-T

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "70 SERIES" RADIAL PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)												Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)	
	16	18	20	22	24	26	28	30	32	34	36	38				40
205/70 R13.....	890	950	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5½	32.29	8.05
205/70 R14.....	950	1,010	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	5½	33.42	8.10
216/70 R14.....	1,020	1,090	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	6	34.34	8.55
225/70 R14.....	1,100	1,180	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6	35.12	8.86
195/70 R15.....	890	950	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	5½	33.34	7.76
205/70 R15.....	950	1,010	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	5½	33.91	7.95
215/70 R15.....	1,020	1,090	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	6	34.87	8.40
225/70 R15.....	1,100	1,180	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	6	35.65	8.65

<sup>1</sup>The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to the "R".  
<sup>2</sup>Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-U

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "60 SERIES" CANTILEVERED TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)												Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)	
	16	18	20	22	24	26	28	30	32	34	36	38				40
B60C-13.....	780	840	890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	4½	30.41	7.65
C60C-15.....	840	890	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,400	4	31.92	7.35

<sup>1</sup>The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".  
<sup>2</sup>Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-V

TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR SERIES "50" BIAS PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)												Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)	
	16	18	20	22	24	26	28	30	32	34	36	38				40
B50-13.....	780	840	890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	6	30.84	9.15
C50-13.....	840	890	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,400	6½	31.48	9.40
D50-13.....	890	950	1,010	1,070	1,120	1,170	1,220	1,270	1,320	1,360	1,410	1,450	1,490	6½	32.29	9.85
F50-14.....	1,020	1,090	1,160	1,220	1,280	1,340	1,400	1,450	1,500	1,550	1,610	1,650	1,700	7	34.10	10.20
G50-14.....	1,100	1,180	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,690	1,730	1,780	1,930	8	35.29	10.95
H50-14.....	1,200	1,290	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	8	36.24	11.35
M50-14.....	1,420	1,520	1,616	1,700	1,780	1,860	1,940	2,020	2,090	2,160	2,230	2,300	2,370	9	38.51	12.55
N50-14.....	1,500	1,600	1,700	1,790	1,880	1,970	2,050	2,130	2,210	2,280	2,360	2,430	2,500	9	39.17	12.85
F50-15.....	950	1,010	1,070	1,130	1,190	1,240	1,300	1,350	1,400	1,440	1,490	1,540	1,580	6½	33.74	9.50
G50-15.....	1,100	1,180	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	7	35.38	10.35
H50-15.....	1,200	1,290	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	8	36.76	11.15
L50-15.....	1,340	1,430	1,520	1,600	1,680	1,750	1,830	1,900	1,970	2,040	2,100	2,170	2,230	8	31.94	11.65
N50-15.....	1,500	1,600	1,700	1,790	1,880	1,970	2,050	2,130	2,210	2,280	2,360	2,430	2,500	9	39.65	12.65

<sup>1</sup>The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".  
<sup>2</sup>Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-W  
TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR "50 SERIES" RADIAL PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
BR50-13.....	780	840	890	930	980	1,030	1,070	1,110	1,150	1,190	1,230	1,270	1,300	6½	30.84	9.15
CR50-13.....	840	890	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,400	6½	31.48	9.40
GR50-14.....	1,100	1,180	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	8	35.29	10.95
JR50-14.....	1,260	1,350	1,430	1,500	1,580	1,650	1,720	1,790	1,860	1,920	1,980	2,040	2,100	8	36.74	11.60
GR50-15.....	1,100	1,180	1,250	1,310	1,380	1,440	1,500	1,560	1,620	1,680	1,730	1,780	1,830	7	35.38	10.35
HR50-15.....	1,200	1,290	1,360	1,440	1,510	1,580	1,650	1,710	1,770	1,830	1,890	1,950	2,010	8	36.76	11.15
JR50-15.....	1,260	1,350	1,430	1,500	1,580	1,650	1,720	1,780	1,860	1,920	1,980	2,040	2,100	8	37.24	11.35
LR50-15.....	1,340	1,430	1,520	1,600	1,680	1,750	1,820	1,900	1,970	2,040	2,100	2,170	2,230	8	37.94	11.65

<sup>1</sup>The letter "H", "S", or "V" may be included in any specified tire size designation adjacent to or in place of the "dash".

<sup>2</sup>Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

TABLE I-X  
TIRE LOAD RATINGS, TEST RIMS, MINIMUM SIZE FACTORS, AND SECTION WIDTHS FOR  
MILLIMETRIC "50 SERIES" RADIAL PLY TIRES

Tire size designation <sup>1</sup>	Maximum tire loads, (pounds) at various cold inflation pressures (p.s.i.)													Test rim width (inches)	Minimum size factor (inches)	Section width <sup>2</sup> (inches)
	16	18	20	22	24	26	28	30	32	34	36	38	40			
205/50R15.....	720	770	810	860	900	940	980	1,020	1,060	1,090	1,130	1,160	1,200	6	30.82	8.19
225/50R15.....	840	890	950	1,000	1,050	1,100	1,140	1,190	1,230	1,270	1,320	1,360	1,400	6½	32.37	8.98

<sup>1</sup>The letters "H", "S" or "V" may be included in any specific tire size designation adjacent to the "R".

<sup>2</sup>Actual section width and overall width shall not exceed the specified section width by more than 7 percent.

36 F.R. 6298  
May 4, 1971



## PREAMBLE TO MOTOR SAFETY STANDARD NO. 110

### Tire Selection and Rims—Passenger Cars (Docket No. 18)

A proposal to amend § 371.21 of Part 371, Initial Federal Motor Vehicle Safety Standards, by adding Standard No. 109, New Pneumatic Tires—Passenger Cars; and Standard No. 110, Tire Selection and Rims—Passenger Cars; was published in the *Federal Register* on July 22, 1967 (32 F.R. 10812).

Interested persons have been afforded an opportunity to participate in the making of the amendment.

Compliance with the labeling requirements of Standard No. 109, established in accordance with section 201 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1421), and the tread wear indicator requirements found in the standard may necessitate the modification of tire molds. Several tire manufacturers requested that additional time be allowed to modify these tire molds. After evaluation of all data received, it was determined that an effective date of August 1, 1968, for paragraphs S4.2.1 and S4.3 would provide a reasonable amount of time to accomplish the necessary mold modifications.

Many comments stated that no practical way is known to permanently affix a label onto the tire sidewall, as would have been required by proposed paragraph S4.3.1 until such time as a label is molded into or onto the tire. Accordingly, S4.3.1 of Standard No. 109 has been modified to permit, until August 1, 1968, the use of a label or tag containing the required labeling information not permanently molded into or onto the tire.

Many comments objected to the limitations imposed by the maximum tire section width dimensions specified in the tables of the notice. The Administrator has determined that additional latitude is necessary, and therefore Standard No. 109 specifies that to provide for tire

growth, protective side ribs, ornamentation, manufacturing tolerances, and design differences for each tire size designation actual tire section width and overall tire width may exceed the section width specified in Table I of the Standard by 7 percent.

In response to requests, additional tire size designations and load/inflation schedules were added when necessary information was available. In addition, Table I of Standard No. 109 and Table II of Standard No. 110 have been combined to collate related information.

Persons desiring an amendment to Standard No. 109 adding tires not presently listed, should submit sufficient pertinent information relative to these tires in 10 copies to the Secretary of Transportation; Attention: Motor Vehicle Safety Performance Service, National Highway Safety Bureau, Federal Highway Administration, U.S. Department of Transportation, Washington, D.C. 20591.

Data received have shown that the rim references indicated in the proposed Standards were inadequate in coverage. Therefore, a more comprehensive list of foreign and domestic trade association publications containing appropriate rim standards or practices has been referenced in the Standards.

Data received demonstrated that the bead seating and tire strength requirements were inappropriate for certain groups of small tires. Accordingly, tires were regrouped and the test values revised to provide requirements for these small tires that are proportional to the requirements for other sizes of tires.

Although Standard No. 109 applies to tires for use on passenger cars manufactured after 1948, some of the tires covered by the Standard may also be used on earlier model vehicles.

The testing procedures set forth in the Standard, size designations, and related data are based upon existing standards or practices using information furnished by such organizations as the Society of Automotive Engineers, Federal Trade Commission, Tire and Rim Association, European Tire and Rim Technical Organization, Japanese Standards Association, Japan Automobile Tire Manufacturers Association, Rubber Manufacturers Association, Tyre Manufacturers Conference, Ltd., and the Society of Motor Manufacturers and Traders, Ltd.

To permit production of sufficient quantities of tires complying with the requirements of Standard No. 109 after its effective date of January 1, 1968, Standard No. 110 applies to passenger cars manufactured on or after April 1, 1968.

A single table of load/pressure values for radial ply tires was included in the notice and this was supported by many comments. Other comments stressed the importance of including different load/pressure values for optimum tire deflections. Although a single table of load/pressure schedules combining these values for these radial ply tires would be desirable, it was not considered advisable to include such a table in the standard promulgated under the present notice.

In accordance with section 201 of the Act, S4.3 of Standard No. 109 requires that each tire be labeled with the name of the manufacturer or his brand name and an approved code mark to permit the tire seller to identify the tire manufacturer upon the purchaser's request. Any tire manufacturer desiring an approved code mark should apply for his code number assignment to the Secretary of Transportation; Attention: Motor Vehicle Safety Performance Service, Na-

tional Highway Safety Bureau, Federal Highway Administration, U.S. Department of Transportation, Washington, D.C. 20591.

Several comments, including the suggested use of a "load range" system, will be considered for future rule-making. (See 32 F.R. 14279).

Since it was clearly the intent of the Congress that, to enhance the safety of the general public, Federal Motor Vehicle Safety Standards for tires become effective as soon as practicable, and since no adverse comments were received pertinent to the proposed effective date presented in the advance notice of proposed rulemaking (32 F.R. 2417), at a Government-industry technical meeting, and in the notice of proposed rulemaking (32 F.R. 10812), and no undue burden was demonstrated, good cause is shown that an effective date earlier than 180 days after issuance is in the public interest.

In consideration of the foregoing, § 371.21 of Part 371, Initial Federal Motor Vehicle Safety Standards, is amended . . . Standard No. 109 becomes effective January 1, 1968, and Standard No. 110 becomes effective April 1, 1968.

(Secs. 103, 119, National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407); delegation of authority of Mar. 31, 1967 (32 F.R. 5606), as amended Apr. 6, 1967 (32 F.R. 6495), July 27, 1967 (32 F.R. 11276), Oct. 11, 1967 (32 F.R. 14277), November 8, 1967).

Issued in Washington, D.C., on November 8, 1967.

Lowell K. Bridwell,  
Federal Highway Administrator

32 F.R. 15792  
November 16, 1967

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 110

### Tire Selection and Rims—Passenger Cars (Docket No. 18R)

Motor Vehicle Safety Standard No. 109 (32 F.R. 15792), as amended (32 F.R. 17938), specifies tire dimensions and laboratory test requirements for bead unseating resistance, strength, endurance, and high speed performance; defines tire load ratings; and specifies labeling requirements for new pneumatic tires for use on passenger cars manufactured after 1948. Motor Vehicle Safety Standard No. 110 (32 F.R. 15798) specifies tire selection and rims requirements to prevent tire overloading.

Figures 2 and 3 of Standard No. 109 are drawings of the bead unseating test fixture used in performing the test specified in S5.2.

Section S5.4.2.3 specifies the 50 miles-per-hour test schedules for the tire endurance test.

Tables I-A through I-H list the various tire types and sizes with proper load and inflation values.

After review of Petitions for Reconsideration received under Docket No. 18R, the Administrator has determined that certain parts of Standard No. 109 require clarification, the tire tables need revision to include a number of new sizes and there is need for a table listing a new series of tires.

In addition, Standard No. 110 requires an additional table to list alternative rims for tire and rim combinations not presently covered by the standard.

Therefore, Standard No. 109 is being amended by—

(a) Revising Figures 2 and 3, which depict the bead unseating test fixture, by adding one additional dimension to Figure 2 and a center line and tangent line to Figure 3;

(b) Specifying that the test required by S5.4.2.3 be conducted without pressure adjustment or other interruption;

(c) In table I-A through I-H

(1) Adding additional tire size designations;  
(2) Adding footnotes permitting the use of the letter "H", "S", or "V";

(3) Correcting typographical errors;

(d) Adding Table I-J which lists a new series of low section height tires.

In addition, Standard No. 110 is being amended by—

(a) Revising paragraph S4.4.1 to include alternative rims, not presently listed in the references cited in the definition of Test Rim in S3 of Standard No. 109; and

(b) Adding a new table of approved alternative rims.

Since these amendments provide clarification and alternative means of compliance, relieve restrictions, and impose no additional burden on any person, notice and public procedure hereon are unnecessary. The Administrator finds, for good cause shown, that no preparatory period is needed to effect compliance and it is therefore in the public interest to make the amendments effective immediately.

In consideration of the foregoing, § 371.21 of Part 371, Federal Motor Vehicle Safety Standards, Standard No. 109 (32 F.R. 15792), as amended (32 F.R. 17938), and Standard No. 110 (32 F.R. 15798), are amended, effective April 11, 1968. . . .

(Secs. 103, 119, National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407); delegation of authority of March 31, 1967 (32 F.R. 5606), as amended Nov. 8, 1967 (32 F.R. 15710)).

Issued in Washington, D.C., on April 11, 1968.

Lowell K. Bridwell,  
Federal Highway Administrator.

33 F.R. 5944  
April 18, 1968



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 110

### Tire Selection and Rims—Passenger Cars (Docket No. 18)

On September 11, 1968, the Federal Highway Administration published in the *Federal Register* amendments to Standard Nos. 109 and 110 (33 F.R. 12842). Omitted from publication as part of Appendix A of Standard No. 109 were Tables 1-A through 1-J. For the convenience of persons using the tables the preamble to the amendments published September 11, 1968, and the text of the amendments, as corrected by the addition of the omitted tables are published below. Additionally, Appendix A of Standard No. 110 has been changed to specify the information that should be submitted with requests for the addition of alternative rim sizes.

Federal Motor Vehicle Safety Standard No. 109 (32 F.R. 15792), as amended (32 F.R. 17938 and 33 F.R. 5944), specifies tire dimensions and laboratory test requirements for bead unseating resistance, strength, endurance and high speed performance; defines tire load ratings; and specifies labeling requirements for new pneumatic tires for use on passenger cars manufactured after 1948. Motor Vehicle Safety Standard No. 110 (32 F.R. 15798) as amended (33 F.R. 5949) specifies tire selection and rim requirements to prevent tire overloading.

Tables 1-A through 1-J of Standard No. 109 list various tire types and sizes with proper load and inflation values.

Standard No. 109 is being amended to designate Tables 1-A through 1-J as Appendix A of Standard No. 109.

In addition, Table 1-H is being amended by adding additional tire size designations.

Table I of Standard No. 110, is a list of alternative rims for tire and rim combinations that are not contained in any reference in §3 of Standard No. 109.

Standard No. 110 is being amended to designate Table I as Appendix A of Standard No. 110.

In addition, the table is being amended by adding, as alternative rims for tire size 8.55 x 15, rim sizes 5½-JK, 5½-JJ and 5½-J; F70-14, rim size 7JJ; and G70-14, rim size 7JJ.

Additionally, guidelines by which persons requesting routine additions to Appendix A of Standard No. 109 and Appendix A of Standard No. 110, are set forth as introductory language to both appendices. The guidelines provide an abbreviated rulemaking procedure for adding tire sizes to Standard No. 109, whereby the addition becomes effective 30 days from date of publication in the *Federal Register* if no comments are received. If comments objecting to the amendment warrant, the Administration will provide for additional rulemaking pursuant to the Rule Making Procedures for Motor Vehicles Safety Standards (23 C.F.R. 216).

Since these amendments provide an alternative means of compliance, relieve restrictions, and impose no additional burdens on any person, notice and public procedure hereon are unnecessary and the Administrator finds, for good cause shown, that no preparatory period is needed to effect compliance and it is in the public interest to make the amendments effective immediately.

In consideration of the foregoing, Section 371.21 of Part 371, Federal Motor Vehicle Safety Standards, Standard No. 109 (32 F.R. 15792), as amended (32 F.R. 17938 and 33 F.R. 5944), and Standard No. 110, (32 F.R. 15798), as amended (33 F.R. 5949), are amended effective this date as set forth below.

Effective: September 27, 1968

These amendments are made under the authority of Sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation from the Secretary of Transportation, Part I of the Regulations of the Office of the Secretary (49 C.F.R. § 1.4(c)).

Issued in Washington, D.C. on September 27, 1968.

John R. Jamieson, Deputy  
Federal Highway Administrator

**33 F.R. 14964**  
**October 5, 1968**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 110

### Tire Selection and Rims

(Docket No. 74-25; Notice 2)

This notice amends the definition of "test rim" in 49 CFR 571.109 (Motor Vehicle Safety Standard No. 109) and modifies related provisions of that section and section 571.110 (Motor Vehicle Safety Standard No. 110). A conforming amendment is made to similar provisions in section 571.119 (Motor Vehicle Safety Standard No. 119). The notice of proposed rulemaking on which this amendment is based was published on July 10, 1974 (39 F.R. 25329).

The definition of "test rim" has previously to this amendment referenced the 1967 and earlier editions of publications of various foreign and domestic tire and rim associations as the source for determining rim specifications and appropriate tire/rim matching information for testing tires to the requirements of Motor Vehicle Safety Standard No. 109, and for equipping passenger cars pursuant to Motor Vehicle Safety Standard No. 110. The Rubber Manufacturers' Association petitioned that this reference be changed because the publications have become outdated in terms of the rim information they provide. This amendment, which adopts the proposed rule of July 10, 1974, in essentially the form proposed, deletes the references to the 1967 and earlier publications and substitutes for them the publications of the various associations current at the time of tire manufacture.

Under the amendment, a "test rim" will be any rim listed for use with a tire size designation in any of the current publications of the various foreign and domestic tire and rim associations. The listing will apply to all tires that fit the description (by tire size designation, use category, etc.) unless the publication itself or a separately published manufacturer's document states otherwise. A manufacturer wishing to

except any tire manufactured by him from any listing would be expected to request the association to publish the exception in its publication. If it does not, the manufacturer must himself publish the exception in his own listing, which he must distribute to his dealers, this agency, and to any member of the public on request. The language of the proposal is clarified, and a conforming amendment made to Standard No. 119 to show that an exception must be published in each association publication listing the tire and rim combination. The amendment further specifies that a "listing" of a rim must contain dimensional specifications, including diagrams, for the rim. This is necessary to provide for uniformity of rim dimensions and reflects the present practice of association publications of publishing such dimensional specifications. However, dimensional specifications or a diagram of a rim need not be included in manufacturers' separate listings if the specifications and diagram for the rim appear in each association publication where it is listed.

By referencing the current publications, the amendment ends the need for Appendix "A" of Standard No. 110, which lists tire/rim combinations approved for use subsequent to the 1967 and earlier associations publications. The associations and various manufacturers should ascertain that all tire/rim combinations presently listed in that Appendix are incorporated into at least one of their respective publications before the effective date of this amendment. Moreover, the addition of new tire/rim combinations subsequent to the effective date becomes the sole responsibility of the industry. Appendix "A" of Standard No. 109, listing tire size designations, is not affected by this amendment.

An effect of the amended definition of test rim is to clarify this agency's position that each tire must be able to pass each performance requirement (except that for physical dimensions) of Standard No. 109 with any rim with which it is listed, regardless of rim width, unless that tire is specifically excepted from each listing where it appears. The requirements for physical dimensions must be met only on a test rim of the width specified for the tire size designation in Standard No. 109. A tire failing the requirements on any test rim would be considered as having failed the requirements on all test rims. This continues existing NHTSA enforcement policy.

One of the two comments received regarding the proposal objected to this aspect of the amendment, arguing that some manufacturers have traditionally certified conformity on the basis of test results using only the test rims of the specified test rim width and that no safety problems had been encountered. The NHTSA believes, however, that the interest of safety demands that manufacturers ensure that tires certified as conforming to Standard No. 109 will conform to the standard's requirements on any rim which the manufacturer lists for use with the tire and with which the tire may consequently be used in service. This position has been reflected in the guidelines for the additions of new tire/rim combinations to the Appendix

of Standard No. 110, which have required that the manufacturer demonstrate conformity to Standard No. 109 on each newly requested rim. If a manufacturer doubts the ability of his tires to conform to the standard on certain recommended rims, he has the option of excepting his tires from being used with those rims. No other objections to the proposed rule were received.

In light of the above, amendments are made to 49 CFR §§ 571.109, 571.110, and 571.119 . . . .

*Effective date:* August 5, 1975 for Standard No. 109 and 110; March 1, 1975, for Standard No. 119. The amendment to Standard No. 119 is of a clarifying nature, and should be made effective with the existing effective date of that standard. The amendment does not require substantial leadtime for conformity, and it is found for good cause shown that an effective date less than 180 days from publication is in the public interest.

(Secs. 103, 119, 201, 202, Pub. L. 89-563, 80 Stat. 718; 15 U.S.C. §§ 1392, 1407, 1421, 1422; delegation of authority at 49 CFR 1.51.)

Issued on January 31, 1975.

James B. Gregory  
Administrator

**40 F.R. 5529**  
**February 6, 1975**

## MOTOR VEHICLE SAFETY STANDARD NO. 110

### Tire Selection and Rims—Passenger Cars

**51. Purpose and scope.** This standard specifies requirements for tire selection to prevent tire overloading.

**52. Application.** This standard applies to passenger cars.

#### 53. Definitions.

“Accessory weight” means the combined weight (in excess of those standard items which may be replaced) of automatic transmission, power steering, power brakes, power windows, power seats, radio, and heater, to the extent that these items are available as factory-installed equipment (whether installed or not).

“Curb weight” means the weight of a motor vehicle with standard equipment including the maximum capacity of fuel, oil, and coolant, and, if so equipped, air conditioning and additional weight optional engine.

“Maximum loaded vehicle weight” means the sum of—

- (a) Curb weight;
- (b) Accessory weight;
- (c) Vehicle capacity weight; and
- (d) Production options weight.

“Normal occupant weight” means 150 pounds times the number of occupants specified in the second column of Table I.

“Occupant distribution” means distribution of occupants in a vehicle as specified in the third column of Table I.

“Production options weight” means the combined weight of those installed regular production options weighing over 5 pounds in excess of those standard items which they replace, not previously considered in curb weight or accessory weight, including heavy duty brakes, ride levelers, roof rack, heavy duty battery, and special trim.

TABLE I

Occupant Loading and Distribution for Vehicle Normal Load for Various Designated Seating Capacities

<i>Designated Seating Capacity, Number Occupants</i>	<i>Vehicle Normal Load, Number of Occupants</i>	<i>Occupant Distribution in a Normally-Loaded Vehicle</i>
2 thru 4	2	2 in front
5 thru 10	3	2 in front 1 in second seat

“Vehicle capacity weight” means the rated cargo and luggage load plus 150 pounds times the vehicle’s designated seating capacity.

“Vehicle maximum load on the tire” means that load on an individual tire that is determined by distributing to each axle its share of the maximum loaded vehicle weight and dividing by two.

“Vehicle normal load on the tire” means that load on an individual tire that is determined by distributing to each axle its share of the curb weight, accessory weight, and normal occupant weight (distributed in accordance with Table I) and dividing by two.

#### 54. Requirements.

**54.1 General.** Passenger Cars shall be equipped with tires that meet the requirements of Motor Vehicle Safety Standard No. 109, “New Pneumatic Tires—Passenger Cars.”

#### 54.2 Tire load limits.

**54.2.1** The vehicle maximum load on the tire shall not be greater than the applicable maximum load rating specified in Table I of Motor Vehicle Safety Standard No. 109 for the tire’s size designation and type.

**54.2.2** The vehicle normal load on the tire shall not be greater than the test load used in the high speed performance test specified in S5.5 of Motor Vehicle Safety Standard No. 109 for that tire.

**S4.3 Placard.** A placard, permanently affixed to the glove compartment door or an equally accessible location, shall display the—

(a) Vehicle capacity weight;

(b) Designated seating capacity (expressed in terms of total number of occupants and in terms of occupants for each seat location);

(c) Vehicle manufacturer's recommended cold tire inflation pressure for maximum loaded vehicle weight and, subject to the limitations of S4.3.1, for any other manufacturer-specified vehicle loading condition; and

(d) Vehicle manufacturer's recommended tire size designation.

**S4.3.1** No inflation pressure other than the maximum permissible inflation pressure may be specified unless—

(a) It is less than the maximum permissible inflation pressure;

(b) The vehicle loading condition for that pressure is specified; and

(c) The tire load rating from Table I of Motor Vehicle Safety Standard No. 109 for the tire at that pressure is not less than the vehicle load on the tire for that vehicle loading condition.

**S4.4 Rims.**

**S4.4.1 Requirements.** Each rim shall:

[(a) Be constructed to the dimensions of a rim that is listed pursuant to the definition of "test rim" in paragraph S3. of § 571.109 (Standard No. 109) for use with the tire size designation with which the vehicle is equipped. (40 F.R. 5529—February 6, 1975. Effective: 8/5/75)]

[(b) In the event of rapid loss of inflation pressure with the vehicle traveling in a straight line at a speed of 60 miles per hour, retain the deflated tire until the vehicle can be stopped with a controlled braking application. (33 F.R. 5949—April 18, 1968)]

**33 F.R. 14969  
October 5, 1968**

**PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 111**  
**Rearview Mirrors—Passenger Cars and Multipurpose Passenger Vehicles**  
**(Docket No. 13)**

Motor Vehicle Safety Standard No. 111 (32 F.R. 2413) specifies requirements for rearview mirrors for use in passenger cars, multipurpose passenger vehicles, and passenger car and multipurpose passenger car equipment.

Paragraph S2, entitled "Application" of Motor Vehicle Safety Standard No. 111 (32 F.R. 2413) requires that the application of the Standard be as follows: "This standard applies to passenger cars, multipurpose passenger vehicles, and passenger car and multipurpose passenger vehicle equipment."

Paragraph S3.2.1.2 entitled "Mounting" of Motor Vehicle Safety Standard No. 111 (32 F.R. 2413) requires that outside mirrors installed on passenger cars and multipurpose passenger vehicles be mounted as follows: "The mounting shall provide a stable support for the mirror and neither the mirror nor the mounting shall protrude further than the widest part of the vehicle body, except to the extent necessary to meet the requirements of S3.2.1.1."

The National Traffic Safety Agency has determined that the mirror mounting may exceed the width of the vehicle to the extent necessary

to produce a field of view meeting or exceeding the requirements of paragraph S3.2.1.1 of Standard No. 111 and that it would not be practicable to extend the application of the standard to replacement parts for vehicles manufactured before the effective date of the standard. Therefore, the standard is being amended to apply to passenger cars and multipurpose passenger vehicles, and to permit a mirror to protrude further than the widest part of the vehicle body to the extent necessary to produce a field of view meeting or exceeding the field-of-view requirements of the standard.

This amendment is made under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C., secs. 1392, 1407) and becomes effective January 1, 1968.

Issued in Washington, D.C., on March 29, 1967.

Lowell K. Bridwell,  
 Acting Under Secretary of  
 Commerce for Transportation  
**33 F.R. 5498**  
**April 4, 1967**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 111

### Rearview Mirrors

(Docket No. 74-20; Notice 2)

This notice amends Standard No. 111, *Rearview Mirrors* (49 CFR 571.111) to allow installation of truck-type mirror systems in multipurpose passenger vehicles and to extend the coverage of the standard to trucks and buses.

The NHTSA proposed in a notice published on May 1, 1974 (39 F.R. 15143) to amend Standard No. 111, to specify minimum requirements for mirror size, capability, and location which would be applicable to all trucks, buses, and motorcycles, and to establish an option which would allow multipurpose passenger vehicles to meet either the present passenger-car mirror requirements or to satisfy the requirements proposed in the notice for trucks and buses. Standard No. 111 currently applies only to passenger cars and multipurpose passenger vehicles, specifying the same rearview mirror requirements for each. The NHTSA has determined that a need exists to extend the standard's coverage to other vehicle types that presently lack uniform Federal regulation in order to ensure observance of minimum mirror performance levels essential to motor vehicle safety.

The NHTSA also proposed in the notice published May 1, 1974 to require that all mirrors required by the standard, except those specified for motorcycles, be designed to reflect an image of unit magnification, thereby limiting any deviation from unit magnification to normal production variations and not variations which are the result of design. To this end it was proposed that the term "substantially" be deleted where it modifies "unit magnification" in the text of Standard No. 111.

Interested persons were afforded an opportunity to submit comments on the proposal by July 1, 1974 and due consideration has been given to the 36 comments received.

Two commenters opposed deletion of the term "substantial" where it modifies "unit magnification" on the ground that only mirrors of precisely unit magnification will now be acceptable. This view is erroneous. The interpretation followed by the NHTSA—and proposed to be incorporated in Standard No. 111 in this issue of the Federal Register—is that deviations from unit magnification are acceptable under the standard as amended below provided that the deviations do not exceed normal manufacturing tolerances.

All comments generally agreed with the NHTSA proposal to extend a Federal rearview mirror standard to trucks, buses and motorcycles. However, several comments recommended mirrors of larger area than those required in the NHTSA proposal for trucks and buses, and suggested the use of convex mirrors in addition to unit magnification mirrors. Others recommended specific requirements for school buses and clarification of the proposed standard for motorcycles with regard to location and area of mirrors and use of convex mirrors. While the NHTSA considers that the proposed extension of the scope of Standard No. 111 to cover trucks and buses will promote efficient rearward visibility, it agrees with those who have urged further research regarding requirements for school buses and motorcycles. Consequently, Standard No. 111 is amended by this notice to extend the scope of its coverage to trucks and buses (including school buses). At the same time, however, the NHTSA is proposing in this issue of the Federal Register to amend Standard No. 111 to specify new rearview mirror requirements for motorcycles and further requirements for school buses.

The majority of comments favored the proposal that trucks, buses, and multipurpose passenger vehicles with a GVWR of 10,000 pounds or less comply either with the present passenger car mirror requirements, or with new requirements specifying outside mirrors on both sides of the vehicle with not less than 19.5 in<sup>2</sup> of reflective surface. This option is intended to overcome difficulties caused by classifying trucks, buses, and multipurpose passenger vehicles into groups specifying one mirror system adequate to fulfill the safety needs of all.

In addition, several commenters felt that heavy commercial vehicles, such as truck tractors, moving vans, and dump trucks, needed outside mirrors larger than 50 in<sup>2</sup>. The NHTSA has determined that the 50 in<sup>2</sup> mirror is adequate for buses and for smaller multipurpose passenger vehicles and trucks. However, for multipurpose passenger vehicles and trucks with a GVWR exceeding 25,000 pounds, a 75 in<sup>2</sup> mirror appears better to meet the safety need. Therefore, while this notice amends Standard No. 111 to require that multipurpose passenger vehicles, trucks, and buses with a GVWR of more than 10,000 pounds have outside mirrors of not less than 50 in<sup>2</sup> of reflective surface, the NHTSA is proposing in this issue of the Federal Register to amend Standard No. 111 to require mirrors of at least 75 in<sup>2</sup> of reflective surface on multipurpose passenger vehicles and trucks with a GVWR of 25,000 pounds or more.

Several persons contended with regard to multipurpose passenger vehicles, trucks, and buses that the provision requiring that mirrors be adjustable by "tilting in both the horizontal and vertical direction" did not take into account

the methods used to mount mirrors on these types of vehicles. Large mirrors, such as the so-called "West Coast" mirror which affords approximately 96 square inches of reflective surface area, are commonly mounted on rigid brace assemblies. These mirrors can be adjusted to provide the driver a view to the rear. However, once they are locked into place they are not capable of "tilting in both the horizontal and vertical direction." While mirrors mounted on ball sockets are fully adjustable in the horizontal and vertical directions by tilting, the NHTSA finds no reason to preclude the use of a mirror that possesses full adjustment capability and is only locked into a position once it satisfies the particular driver's viewing needs.

The NHTSA has decided to delete the words "by tilting" from the requirements for multipurpose passenger vehicles, trucks, and buses. The rule requires that mirrors on such vehicles "shall be adjustable in both the horizontal and vertical directions to view the rearward scene."

In consideration of the foregoing, Motor Vehicle Safety Standard No. 111, 49 CFR 571.111, is amended. . . .

*Effective date:* February 12, 1976.

(Secs. 103, 119, Pub. L. 89563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on: August 6, 1975.

James B. Gregory  
Administrator

**40 F.R. 33825**  
**August 12, 1975**

## MOTOR VEHICLE SAFETY STANDARD NO. 111

### Rearview Mirrors—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses

**51. Scope.** This standard specifies requirements for the performance and location of rearview mirrors.

**52. Purpose.** The purpose of this standard is to reduce the number of deaths and injuries that occur because the driver of a motor vehicle does not have a clear and reasonably unobstructed view to the rear.

**53. Application.** This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses.

#### 54. Requirements for passenger cars.

**54.1 Inside rearview mirror.** Each passenger car shall have an inside rearview mirror of unit magnification.

**54.1.1 Field of view.** Except as provided in S4.3, the mirror shall provide a field of view with an included horizontal angle measured from the projected eye point of at least 20 degrees, and sufficient vertical angle to provide a view of a level road surface extending to the horizon beginning at a point not greater than 200 feet to the rear of the vehicle when the vehicle is occupied by the driver and four passengers or the designed occupant capacity, if less, based on an average occupant weight of 150 pounds. The line of sight may be partially obscured by seated occupants or by head restraints. The location of the driver's eye reference point shall be that established in Motor Vehicle Safety Standard No. 104 (§ 571.104).

**54.1.2 Mounting.** The passenger car mirror mounting shall provide a stable support for the mirror, and shall provide for mirror adjustment by tilting in both horizontal and vertical directions. If the mirror is in the head impact area, the mounting shall deflect, collapse, or break away without leaving sharp edges when the mir-

ror is subjected to a force of 90 pounds in a forward or sideward direction in any plane 45° above or below the horizontal.

#### 54.2 Outside rearview mirror—driver's side.

**54.2.1 Field of view.** Each passenger car shall have an outside mirror of unit magnification. The mirror shall provide the driver a view of a level road surface extending to the horizon from a line, perpendicular to a longitudinal plane tangent to the driver's side of the vehicle at the widest point, extending 8 feet out from the tangent plane 35 feet behind the driver's eyes, with the seat in the rearmost position. The line of sight may be partially obscured by rear body or fender contours. The location of the driver's eye reference point shall be that established in Motor Vehicle Safety Standard No. 104 (§ 571.104).

**54.2.2 Mounting.** The mirror mounting shall provide a stable support for the mirror, and neither the mirror nor the mounting shall protrude farther than the widest part of the vehicle body except to the extent necessary to produce a field of view meeting or exceeding the requirements of S4.2.1. The mirror shall not be obscured by the unwiped portion of the windshield, and shall be adjustable by tilting in both horizontal and vertical directions from the driver's seated position. The mirror and mounting shall be free of sharp points or edges that could contribute to pedestrian injury.

#### 54.3 Outside rearview mirror passenger's side.

Each passenger car whose inside rearview mirror does not meet the field of view requirements of S4.1.1 shall have an outside rearview mirror of unit magnification installed on the passenger's side. The mirror mounting shall provide a stable support and be free of sharp points or edges that could contribute to pedestrian injury.

The mirror need not be adjustable from the driver's seat but shall be capable of adjustment by tilting in both horizontal and vertical directions.

**S5 Requirements for multipurpose passenger vehicles, trucks, and buses with GVWR of 10,000 pounds or less.**

**S5.1** Each multipurpose passenger vehicle, truck, and bus with GVWR of 10,000 pounds or less shall have either—

(a) Mirrors that conform to the requirements of S4; or

(b) Outside mirrors of unit magnification, each with not less than 19.5 in<sup>2</sup> of reflective surface, installed with stable supports on both sides of the vehicle, located so as to provide the driver a view to the rear along both sides of the vehicle, and adjustable in both the horizontal and vertical directions to view the rearward scene.

**S6. Requirements for multipurpose passenger vehicles, trucks, and buses with GVWR of more than 10,000 pounds.**

**S6.1** Each multipurpose passenger vehicle, truck, and bus with a GVWR of more than 10,000 pounds shall have outside mirrors of unit magnification, each with not less than 50 in<sup>2</sup> of reflective surface, installed with stable supports on both sides of the vehicle. The mirrors shall

be located so as to provide the driver a view to the rear along both sides of the vehicle and shall be adjustable in both the horizontal and vertical directions to view the rearward scene.

**S7. Mirror construction.** The reflectance value of the reflective film employed on any mirror required by this standard, determined in accordance with SAE Recommended Practice J964, June, 1966, shall be at least 35 percent. If a mirror is of the selective position prismatic type, the reflectance value in the night driving position shall be at least 4 percent.

**[INTERPRETATION**

(1) When a supplemental mirror is furnished in addition to the inside rearview mirror and the driver's side outside rearview mirror, the supplemental mirror need not be adjustable from the driver's seat.

(2) The location of the driver's eye reference point may be that established in Motor Vehicle Safety Standard No. 104, or it may be a nominal location appropriate for any 95th percentile male driver.

(3) The horizontal angle is measured from the projected eye point, rather than the plane of the mirror. (32 F.R. 5499—April 4, 1967) ]

**32 F.R. 2413  
February 3, 1967**

## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO 112

### Headlamp Concealment Devices—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses, and Motorcycles

(Docket No. 1-16)

A proposal to amend Part 371 by adding Federal motor vehicle safety standard No. 112, Headlamp Concealment Devices—Passenger Cars, Multipurpose Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses, and Motorcycles, was published as an advance notice of proposed rule making on October 14, 1967 (32 F.R. 14280) and as a notice of proposed rule making on December 28, 1967 (32 F.R. 20865).

Interested persons have been given the opportunity to participate in the making of this amendment, and careful consideration has been given to all relevant matter presented.

Inadvertent actuation of a headlamp concealment devices, due to a defective condition thereby causing headlamps to be blacked out, has compromised the safety of occupants of the vehicle concerned and other highway users. There have been reports of several accidents and incidents caused by such inadvertent blacking out of headlamps. In addition, the Administrator considers headlamp concealment devices present a continuing hazard to motor vehicle safety in that they may inadvertently black out headlamps while headlamps are in use. This standard requires that fully opened headlamp concealment devices must remain fully opened whenever there is a loss of power to or within the device and whenever any malfunction occurs in components that control or conduct power for the operation of a concealment device. These requirements provide a fail-safe operation which serves to prevent further incidents of inadvertent blacking out of headlamps by headlamp concealment devices.

In addition, other safety performance criteria are established. Thus, whenever any malfunction occurs in components that control or conduct power for the actuation of the concealment de-

vice, additional means for fully opening each headlamp concealment device must be provided. A single mechanism must be provided for actuating the headlamp concealment device and illuminating the lights. The installation of each headlamp concealment device must be such that no component of the device, other than components of the headlamp assembly, need be removed when mounting, aiming and adjusting the headlamps. Headlamp beams that illuminate during opening and closing of the headlamp concealment device may not project to the left of or above the position of the beam in the fully opened position. Finally, within the temperature ranges specified, headlamp concealment devices must be fully opened in three seconds after actuation of the appropriate mechanism, except in the event of a power loss. These additional performance criteria meet the needs of motor vehicle safety by increasing the safe and reliable operation of headlamp concealment devices.

Several comments stated that a requirement for fail-safe operation under any combination of unforeseeable circumstances is unreasonable. The requirements expressed in S4.1 are not intended to impose responsibility for failures caused by abuse, poor maintenance practices or other conditions not encompassed by S4.1. Whether or not failure of a headlamp concealment device to remain in an open position once fully opened is a violation of the standard would, of course, depend upon whether the device failed under the conditions encompassed by the standard. Some comments requested that the conditions expressed in S4.1 be made test conditions and one commentator submitted a suggested test procedure to demonstrate compliance. Because of the wide variety of designs and types of

headlamp concealment devices currently in use, no single demonstration procedure is appropriate for all. Consequently, prescription of a standard demonstration procedure is neither practicable nor feasible under the circumstances. The Administrator concludes that the needs of motor safety require that headlamp concealment devices be fail-safe. The Administrator further concludes that the most appropriate method of meeting those needs and of preventing further hazard from obstructed headlamps caused by headlamp concealment device failures is by the prescription of fail-safe operational criteria, as specified in S4.1. Accordingly, the requests are denied.

A number of comments stated that the 3-second operating time requirement and the aiming requirements for rotating headlamps would impose unreasonable burdens in retooling and redesigning if the January 1, 1969, effective date is to be met. Based upon the data presented, the Administrator agrees with these comments. Accordingly, S4.5 and S4.6 are made effective January 1, 1970.

Several comments recommended additional provisions expressly permitting headlamp concealment devices that are automatically actuated by light sensing mechanisms. This standard is not intended to prevent the use of light sensing mechanisms. Consequently, language has been added to clarify this intention if the light sensing mechanism meets the same operational requirements prescribed for switch operated headlamp concealment devices.

Several comments requested inclusion of a provision in S4.3 permitting an additional separate control that actuates only the headlamp concealment device. The Administrator considers permitting this additional control would not be in the best interests of motor vehicle safety. The requests are, therefore, denied.

Other comments suggested that rotating headlamps be required to return to the correctly aimed position after a specified minimum number of opening and closing cycles that power be provided for at least one opening cycle after the vehicle engine has been stopped for a specified length of time; that a warning device be required to indicate to the driver that the concealment devices are malfunctioning; that requirements for aiming and adjusting of headlamps be expanded to insure that vehicle body structure and lamp ornaments will not interfere with these operations; that the standard prohibit designs which permit snow and ice to accumulate over the sealed beam headlamp units; that requirements be included to assure capability for opening concealment devices that are frozen shut; and that a standard be established to prohibit the use of headlamp concealment devices. Although some of these suggestions appear to have merit, they are all beyond the scope of the notice and will, therefore, be considered for future rule making action.

In consideration of the foregoing, § 371.21 of Part 371 of the Federal motor vehicle safety standards is amended by adding Standard No. 112, Headlamp Concealment Devices—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses, and Motorcycles . . . effective January 1, 1969.

This rule-making action is taken under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (Public Law 89-563, 15 U.S.C. sections 1392 and 1407) and the delegation of authority of April 24, 1968.

Issued in Washington, D.C., on April 24, 1968.

Lowell K. Bridwell,  
Federal Highway Administrator

**33 F.R. 6469**  
**April 27, 1968**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD 112

### Headlamp Concealment Devices—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses and Motorcycles

Motor Vehicle Safety Standard No. 112, published in the *Federal Register* on April 27, 1968 (33 F.R. 6469), specifies requirements for headlamp concealment devices for passenger cars, multipurpose passenger vehicle, trucks, buses and motorcycles manufactured after December 31, 1968.

Paragraph S4.1 requires that each fully opened headlamp concealment device remain fully opened whenever either or both of the following occur—

- a. Any loss of power to or within the headlamp concealment device;
- b. Any disconnection, restriction, short-circuit, circuit time delay, or other similar malfunction in any wiring, tubing, hose, solenoid or other component that controls or conducts power for operating the concealment device.

The purpose of S4.1 is to prevent a malfunctioning headlamp concealment device from inadvertently covering an illuminated headlamp. However, the Administrator has concluded that this paragraph may be construed to prohibit the closing of headlamp concealment devices while the headlamps are not illuminated. Consequently, paragraph S4.1 is being amended to clarify that its requirements apply only while the headlamps are illuminated.

Since this amendment provides clarification and imposes no additional burden on any person, notice and public procedure hereon are unnecessary. It is therefore found, for good cause shown, that an effective date earlier than 180 days after issuance is in the public interest and in the interest of motor vehicle safety.

In consideration of the foregoing, § 371.21 of Part 371, Federal Motor Vehicle Safety Standards, Motor Vehicle Safety Standard No. 112 (33 F.R. 6469), paragraph S4.1 is amended effective January 25, 1969. . . .

This amendment is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and pursuant to the delegation of authority from the Secretary of Transportation, Part 1 of the regulations of the Office of the Secretary (49 CFR 1.4(c)).

Issued on January 22, 1969.

John R. Jamieson, Deputy  
Federal Highway Administrator

**34 F.R. 1246**  
**January 25, 1969**



## MOTOR VEHICLE SAFETY STANDARD NO. 112

### Headlamp Concealment Devices—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses and Motorcycles

**51. Scope.** This standard specifies requirements for headlamp concealment devices.

**52. Application.** This standard applies to passenger cars, multipurpose passenger vehicles, trucks, buses, and motorcycles.

**53. Definitions.** "Fully opened" means the position of the headlamp concealment device in which the headlamp is in the design open operating position.

"Headlamp concealment device" means a device, with its operating system and components, that provides concealment of the headlamp when it is not in use, including a movable headlamp cover and a headlamp that displaces for concealment purposes.

"Power" means any source of energy that operates the headlamp concealment device.

#### 54. Requirements.

**54.1** [While the headlamp is illuminated, its fully opened headlamp concealment device shall remain fully opened whenever either or both of the following occur—

(a) Any loss of power to or within the headlamp concealment device;

(b) Any disconnection, restriction, short-circuit, circuit time delay, or other similar malfunction in any wiring, tubing, hose, solenoid or other component that controls or conducts power for operating the concealment device. (34 F.R. 1246—Jan. 25, 1969)]

**54.2** Whenever any malfunction occurs in a component that controls or conducts power for the actuation of the concealment device, each closed headlamp concealment device shall be capable of being fully opened—

(a) By automatic means;

(b) By actuation of a switch, lever or other similar mechanism; or

(c) By other means not requiring the use of any tools. Thereafter, the headlamp concealment device must remain fully opened until intentionally closed.

**54.3** Except for cases of malfunction covered by S4.2, each headlamp concealment device shall be capable of being fully opened and the headlamps illuminated by actuation of a single switch, lever, or similar mechanism, including a mechanism that is automatically actuated by a change in ambient light conditions.

**54.4** Each headlamp concealment device shall be installed so that the headlamp may be mounted, aimed, and adjusted without removing any component of the device, other than components of the headlamp assembly.

**54.5** After December 31, 1969, the headlamp beam of headlamps that illuminate during opening and closing of the headlamp concealment device may not project to the left of or above the position of the beam when the device is fully opened.

**54.6** Except for cases of malfunction covered by S4.2, after December 31, 1969, each headlamp concealment device shall, within an ambient temperature range of  $-20$  to  $+120$  degrees F., be capable of being fully opened in not more than three seconds after actuation of the mechanism described in S4.3.

34 F.R. 1246  
January 25, 1969



## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 113

### Hood Latch Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses (Docket No. 1-17)

A proposal to amend Part 371 by adding Federal motor vehicle safety Standard No. 113, Hood Latch Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses, was published as an advance notice of proposed rule making on October 14, 1967 (32 F.R. 14280), and as a notice of proposed rule making on December 28, 1967 (32 F.R. 20866).

Interested persons have been given the opportunity to participate in the making of this amendment, and careful consideration has been given to all relevant matter presented.

This new standard requires that all motor vehicles to which it is applicable be equipped with a hood latch system. Additionally, in those instances where a vehicle is equipped with a front opening hood, which in any open position partially or completely obstructs a driver's forward view through the windshield, a second latch position on the hood latch system or a second hood latch system must be provided.

Available data reveals that inadvertent hood openings pose a serious hazard to the safe operation of motor vehicles, particularly in the case of front opening hoods. By requiring a hood latch system for all hoods, and under certain circumstances, a second position on that system or an independent second system, this standard will help to reduce incidents of inadvertent hood openings.

All the comments support the need for a hood latch system or hood latch systems, as the case may be. Several commentators requested inclusion of a definition of "hood" and "front opening hood." The Administrator agrees that "hood" should be defined and has defined it as any exterior movable body panel forward of the windshield used to cover an engine, luggage, storage,

or battery compartment. However, the Administration concludes that a definition of "front opening hood" is unnecessary; that phrase is sufficiently definite and is clearly distinguishable from a "side opening" or "rear opening" hood.

Several commentators conditioned their support upon the understanding that the requirement for front opening hoods could be met by a single latch system with two positions, by two separate primary latch systems, or separate primary and secondary latches. Language changes have been made to S4.2 to clarify that all of these types of installations are acceptable.

Several commentators expressed concern over the lack of quantitative performance criteria for hood latch systems. The Administrator finds that additional research and study are necessary before meaningful quantitative performance criteria can be appropriately specified.

In consideration of the foregoing, § 371.21 of Part 371 of the Federal motor vehicle safety standards is amended by adding Standard No. 113, Hood Latch Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses . . . effective January 1, 1969.

This rule making action is taken under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (Public Law 89-563, 15 U.S.C. sections 1392 and 1407), and the delegation of authority of April 24, 1968.

Issued in Washington, D.C., on April 24, 1968.

Lowell K. Bridwell,  
Federal Highway Administrator

33 F.R. 6470  
April 27, 1968



## MOTOR VEHICLE SAFETY STANDARD NO. 113

### Hood Latch Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses

**S1. Purpose and scope.** This standard establishes the requirement for providing a hood latch system or hood latch systems.

**S2. Application.** This standard applies to passenger cars, multipurpose passenger vehicles, trucks and buses.

**S3. Definitions.** "Hood" means any exterior movable body panel forward of the windshield that is used to cover an engine, luggage, storage, or battery compartment.

#### **S4. Requirements.**

**S4.1** Each hood must be provided with a hood latch system.

**S4.2** A front opening hood which, in any open position, partially or completely obstructs a driver's forward view through the windshield must be provided with a second latch position on the hood latch system or with a second hood latch system.

**33 F.R. 6471**  
**April 27, 1968**



## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 114

### Theft Protection—Passenger Cars

(Docket No. 1-21)

A proposal to amend § 371.21 of Part 371, Federal Motor Vehicle Safety Standards by adding a new standard, Theft Protection—Passenger Cars, was published in the *Federal Register* on December 28, 1967 (32 F.R. 20866).

Interested persons have been afforded an opportunity to participate in the making of the standard. Their comments and other available information have been carefully considered.

Responses to the notice and other information have demonstrated that stolen cars constitute a major hazard to life and limb on the highways. The evidence shows that cars operated by unauthorized persons are far more likely to cause unreasonable risk of accident, personal injury, and death than those which are driven by authorized individuals. Further, the incidence of theft, and hence the risk of accidents attributable thereto, is increasing. According to a recent study by the Department of Justice there were an estimated 94,000 stolen cars involved in accidents in 1966, and more than 18,000 of these accidents resulted in injury to one or more people. On a proportionate basis, 18.2 percent of the stolen cars became involved in accidents, and 19.6 percent of the stolen-car accidents resulted in personal injury. The same study predicted that automobile thefts in 1967 total about 650,000; about 100,000 of these stolen cars could be expected to become involved in highway accidents. Comparing these figures with statistics for vehicles which are not stolen, the approximate rate for stolen cars would be some 200 times the normal accident rate for other vehicles. Thus, a reduction in the incidence of auto theft would make a substantial contribution to motor vehicle safety. It would not only reduce the number of injuries and deaths among those who steal cars, it would also protect the many inno-

cent members of the public who are killed and injured by stolen cars each year.

The President's Commission on Law Enforcement and Administration of Justice, in its report "The Challenge of Crime in a Free Society," noted the rising cost in lives and dollars as a result of auto theft, highlighted the need for measures to reduce auto thefts and suggested that "The responsibility could well be assigned to the National Highway Safety Agency as part of its program to establish safety standards for automobiles." (pp. 260-261).

The Administrator has concluded that a standard that would reduce the incidence of unauthorized use of cars meets the needs for motor vehicle safety. Consequently, he rejects those comments on the proposed standard which questioned its validity on the ground that it is not related to improving motor vehicle safety. As indicated below, amateur car thieves make up the majority of those unauthorized drivers who become involved in motor vehicle accidents. Many of these thieves make use of keys left in the ignition locks to start the cars they steal. Hence, the standard requires each car to be equipped with a device to remind drivers to remove the key when leaving the car. The number of car thieves who start cars with so-called "master keys" and devices which bypass the lock is also large enough to produce a significant safety hazard. Therefore, the standard also requires devices which tend to defeat this category of thief: A large number of locking-system combinations and a steering or self-mobility lock.

Several comments urged that the warning-device requirement be eliminated from the standard upon the ground that the removal of the key is the driver's responsibility. It was also said that, since any locking system, no matter how

it is constructed, can be defeated by persons possessing sufficient skill, equipment, and tenacity, provisions for ensuring removal of ignition keys would be futile because a thief need not make use of a key.

As the Department of Justice survey mentioned above demonstrates, however, the large majority of car thieves are amateurs, almost half of whom are engaged in so-called "joy-riding." The evidence shows that a high proportion of these thieves, most of whom are juveniles, start the cars' engines simply by using the key which has been left in the ignition lock. It is, of course, the operator's responsibility to remove the key when the car is left unattended and drivers should continue to be exhorted or required to take this elementary precaution. Nevertheless, many do not, and the interest of safety would be promoted by the existence of a visible or audible warning device on the car, reminding the driver when he has neglected his responsibility. This is an instance in which engineering of vehicles is more likely to have an immediate beneficial impact than a long-range process of mass education.

The requirement of a warning when the key is left in the lock was also the subject of several comments which asked that the warning be required when the front-seat passenger's door, as well as the driver's door, is opened. There is considerable validity in the contention that the device should operate upon the opening of either door, particularly because, in some jurisdictions, exiting from a car on the left side is prohibited in certain circumstances. However, the notice of proposed rule making stated that the standard under consideration made the warning-device requirement applicable only when the driver's door is opened. Information available to the Administrator shows that development of such warning devices has concentrated on warnings that are activated only in the event the driver's door is opened while the key remains in the lock. To extend this requirement to the opening of either door might necessitate both the initiation of new rulemaking proceedings and an extension of the standard's effective date. For these reasons, the requirement is, with minor exceptions discussed below, in substance unchanged from the one which appeared in the notice of proposed

rulemaking. Extension of the requirement to passenger-door warning devices will be kept under consideration.

The January 1, 1970, effective date also remains unchanged. Most of the comments which focused on the proposed effective date stated that the standard could be complied with by that date. One manufacturer sought a 1-year extension on the ground that it could not produce a steering or mobility lock in sufficient time to equip its automobiles with such a device by January 1, 1970. Although this comment alleged that data in the possession of its author showed that the cost of purchasing and installing a device to comply with the standard would impose an unreasonable economic burden, neither those data nor the basis for the company's conclusion have been supplied to the Administration. In short, nothing supported the request except the broad generalization that the proposed effective date would cause some undefined hardship. Balancing this unsubstantiated generalization against the increase in deaths and injuries that postponing the effective date for a year would probably cause, the Administrator has concluded that a change in the effective date to January 1, 1971, would not be in the interest of safety, that the January 1, 1970, effective date is a practicable one, and that the request to extend it for 1 year is denied.

Many persons who responded to the notice asked that specific theft protection devices be prescribed. These specific devices included brake locks and so-called "pop-out" keys which automatically eject from the locking system, to devices which purportedly make by-passing the ignition switch impossible. The Administrator concludes that it would be unwise to establish a standard in terms so restrictive as to discourage technological innovation in the field of theft inhibition. Consequently, the standard has been framed to permit as many specific devices as possible to meet its requirements. In addition, the standard does not preclude the use of supplementary theft protection measures, such as the "pop-out" key, so long as automobiles comply with the standard's minimum requirement.

In drafting the standard, a number of revisions were made in the language employed in the notice of proposed rulemaking. Many of

these revisions clarify definitional problems that were raised in responses to the notice. The term "key" is defined so as to include methods of activating the locking system other than the commonly accepted concept of a key. The term "combination" was defined to clarify its meaning, and the 1,000-combinations requirement has been changed to make it clear that, after the standard's effective date, each manufacturer must produce at least 1,000 different locking system combinations, unless he manufactures less than 1,000 passenger cars. In response to comments which pointed out the impossibility of constructing a system which, upon removal of the key, would prevent operation of the powerplant absolutely and in all events, the provisions of paragraph S3(a) of the notice were revised to require only that removal of the key must prevent normal activation of the powerplant. Paragraph S4.2 represents a clarification of the requirement contained in paragraph S3.3 of the notice. It is intended to permit the driver of a car to turn off the engine in emergency situations while the car is in motion without also activating the steering or self-mobility lock. Other minor changes were made for amplification or clarification.

Shortly after the issuance of this standard, the Administrator will issue a notice of proposed rulemaking to determine the practicability of

improving the standard by adding a requirement that key locking systems be designed and constructed to preclude accidental or inadvertent activation of the deterrent required by S4.1(b) while the car is in motion. The notice will propose an effective date for the additional requirement identical to that of the present standard: January 1, 1970.

In consideration of the foregoing, § 371.21 of Part 371, Federal Motor Vehicle Safety Standards, is amended by adding Standard No. 114, . . . , effective January 1, 1970.

In accordance with section 103(c) of the National Traffic and Motor Vehicle Safety Act of 1966, I find that it would be impractical to require compliance with this standard within 1 year and therefore it is in the public interest to adopt a later effective date.

This amendment is made under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority of April 24, 1968.

Issued in Washington, D.C., on April 24, 1968.

Lowell K. Bridwell,  
Federal Highway Administrator

**33 F.R. 6471**  
**April 27, 1968**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 114

### Theft Protection—Passenger Cars

(Docket No. 1-21)

The Administrator is amending Motor Vehicle Safety Standard No. 114, Theft Protection—Passenger Cars, for the purpose of making several clarifying changes to it. The standard was issued on April 24, 1968 (33 F.R. 6471) and becomes effective on January 1, 1970. After the standard was issued, the Administrator received a number of requests for interpretations or clarifying amendments. While each of the requests discussed below could have been disposed of by interpretation of the present standard, the Administrator has chosen to change the text of the standard in order to ensure that it is clear on its face.

Paragraph S4.1(b) of the standard, as adopted, requires each passenger car to have a key locking system that, with the key removed, will prevent “either steering or self-mobility of the car or both.” Several persons pointed out that a literal interpretation of this provision would require a manufacturer who seeks to comply with the self-mobility requirement to install a system that prevents both forward and rearward self-mobility. In view of the improbability of a successful theft of a car capable only of rearward self-mobility, the Administrator agrees that such a literal interpretation would not be consistent with the general purpose of the standard. Therefore, paragraph S4.1(b) is being clarified by inserting the word “forward” before the word “self-mobility”.

Several persons sought clarification of paragraph S4.4, which requires activation of a warning to the driver whenever the key has been left in the locking system and the driver's door is opened. The purpose of this provision is to prevent, as far as possible, drivers from inadvertently leaving the key in the ignition lock when the car is unoccupied. As stated in the preamble to the

standard when it was adopted, “the standard requires each car to be equipped with a device to *remind* drivers to remove the key when leaving the car” (emphasis added).

It was pointed out that a literal reading of the phrase “left *in* the locking system” (emphasis added) would require activation of the warning regardless of the extent to which the key is inserted in the lock, even if the driver deliberately chooses to withdraw it partially from the lock. These comments argued that it was practically impossible to design a warning system that would function if, for example, the key is so far removed as to be dangling from the locking mechanism. It was the purpose of this provision to require activation of the warning device whenever the key is left in the lock in a position from which the lock can be turned. Once the driver has withdrawn the key beyond the position, he is presumably aware of the location of the key, and no warning need be given to him. Paragraph S4.4 is being amended to clarify this intent.

Paragraph S4.4 is also being amended to avoid the possibility of an interpretation that would prohibit use of a type of locking system and steering lock that has, in the past, been a successful deterrent against theft. In this system, the warning to the driver works in conjunction with the activation of the steering lock device. The steering lock is not activated when the key, after having been withdrawn from the ignition lock, is simply reinserted in the locking system. Nor is the warning to the driver actuated until the key is turned so that the steering lock is deactivated. As noted above, the purpose of paragraph S4.4 is not to guarantee that drivers will remove the key upon leaving the car; rather, it seeks to ensure that drivers do not inadvertently leave their keys in ignition locks. In all but a very small

number of cases, a driver who has withdrawn and then reinserted the key cannot be said to have inadvertently left it in the locking system when he thereafter exits from the car. Therefore, paragraph S4.4 is being amended to make it clear that the warning device need not operate after the key has been removed and reinserted in the locking system without turning the key.

Finally, several persons pointed out that the language of paragraph S4.4 would require activation of the warning device even if the locking system is in the "on" or "start" position. A positive physical act is usually required to bring the system to the "on" position or the "start" position. Moreover, a forgetful driver would not normally leave the key in the "on" position if he opened his door with the intent of leaving the car unattended. In most cases, it is impossible for him to leave the key in the "start" position without physically holding it in that position. Hence, no valid purpose would be served by requiring the warning to be activated when the locking system is in either of those positions, and

the standard is being amended to omit any implication that such a requirement is imposed.

Since these changes are clarifying and interpretive in nature, and since they impose no additional burden on any person, I find that notice and public procedure thereon is unnecessary.

In consideration of the foregoing, section 371.21 of Part 371, Federal Motor Vehicle Safety Standards, Motor Vehicle Safety Standard No. 114 (33 F.R. 6741) is amended, effective January 1, 1970, as set forth below.

(Secs. 103 and 119, National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority at 49 C.F.R. 1.4(c))

Issued on June 9, 1969.

F. C. Turner  
Federal Highway Administrator

June 13, 1969  
34 F.R. 9342

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 114

### Theft Protection—Passenger Cars

(Docket No. 1-21)

#### *Driver-Warning Requirement—Denial of Petition for Amendment; Extension of Effective Date*

General Motors Corporation has filed a petition for amendment of paragraph S4.4 of Motor Vehicle Safety Standard No. 114. That paragraph requires each passenger car manufactured after December 31, 1969 to have a warning to a driver who neglects to remove his key from the ignition lock before he leaves the car. As amended (34 F.R. 9342), the standard provides that the warning need not operate "after the key has been manually withdrawn to a position from which it may not be turned."

The basis of the petition is that, in the current-model General Motors system, manufacturing tolerances may be such as to permit a driver to manipulate the ignition key into a position at which the warning buzzer will be deactivated while the ignition lock remains operative. General Motors seeks an amendment to permit the warning to be inoperative "after the key has been manually withdrawn from the normal operating position."

Upon consideration of the petition and other evidence, the Administrator has concluded that it would not be in the public interest to grant the relief General Motors has requested. The purpose of paragraph S4.4 is to make it virtually impossible for a driver inadvertently to leave his key in the ignition lock when he exits and thereby to reduce car thefts along with the high potential for accidental injury and death that stolen cars have. If it were possible for a driver to manipulate the key so as to render the warning inoperative while, at the same time, to continue to operate the vehicle with the key in the lock, the salutary purpose of the warning requirement would be defeated. Therefore, the petition for amendment is denied.

However, the Administrator recognizes that the tolerance problem General Motors has raised is a genuine one. It may be related to the fact that General Motors attempted, in good faith, to manufacture cars that complied with Standard No. 114 well before the standard's effective date. This is a laudable action for which General Motors should not be penalized. Furthermore, the Administrator realizes that the General Motors system is installed not only on its own productoin but also in passengers car produced by other high-volume manufacturers.

Therefore, the Administrator has concluded that the effective date of paragraph S4.4 of Standard No. 114 should be extended to allow additional time to overcome the tolerance problem. According to the best information available at this time, it appears that a 90-day extension of the January 1, 1970 effective date will provide sufficient time for redesigning and retooling the General Motors system so that it fully conforms to the standard's requirements and to put the new system into production. This conclusion is based on the expectation that the problems involved will be attacked on an urgent, high priority basis, as they should be in view of the safety need that paragraph S4.4 meets. The Administrator may consider a further extension at a later date if additional evidence to justify such an extension is adduced at that time.

Because of the shortness of time before the effective date of Standard No. 114 and because extension of that effective date for compliance with paragraph S4.4 of the standard will impose no additional burden on any person, notice and public procedure hereon are found to be unnecessary and impracticable.

In consideration of the foregoing, the effective date of paragraph S4.4 of Motor Vehicle Safety

**Effective: April 1, 1970**

Standard No. 114, in § 371.21 of Part 371 is extended to April 1, 1970.

(Secs. 103 and 119, National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority at 49 CFR 1.4(c)).

Issued on December 3, 1969.

F. C. Turner  
Federal Highway Administrator

**34 F.R. 19547**  
**December 11, 1969**

**MOTOR VEHICLE SAFETY STANDARD NO. 114****Theft Protection—Passenger Cars**

**S1. Purpose and scope.** This standard specifies requirements for theft protection to reduce the incidence of accidents resulting from unauthorized use.

**S2. Application.** This standard applies to passenger cars.

**S3. Definitions.** "Combination" means one of the specifically planned and constructed variations of a locking system which, when properly actuated, permits operation of the locking system.

"Key" includes any other device designed and constructed to provide a method for operating a locking system which is designed and constructed to be operated by that device.

**S4. Requirements.**

**S4.1** Each passenger car shall have a key-locking system that, whenever the key is removed, will prevent—

(a) Normal activation of the car's engine or other main source of motive power; and

(b) Either steering or forward self-mobility of the car, or both.

**S4.2** The prime means for deactivating the car's engine or other main source of motive power shall not activate the deterrent required by S4.1(b).

**S4.3** The number of different combinations of the key locking systems required by S4.1 of each manufacturer shall be at least 1,000, or a number equal to the number of passenger cars manufactured by such manufacturer, whichever is less.

**S4.4** A warning to the driver shall be activated whenever the key required by S4.1 has been left in the locking system and the driver's door is opened. The warning to the driver need not operate—

(a) after the key has been manually withdrawn to a position from which it may not be turned;

(b) when the key-locking system is in the "on" or "start" position; or

(c) after the key has been inserted in the locking system and before it has been turned.

**33 F.R. 6472**  
**April 27, 1968**



## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 115

### Vehicle Identification Number—Passenger Cars

(Docket No. 1-22)

A proposal to amend section 371.21 of Part 371, Federal Motor Vehicle Safety Standards, by adding a new standard, Vehicle Identification Number—Passenger Cars, was published in the *Federal Register* on December 28, 1967 (32 F.R. 20886).

Interested persons have been afforded an opportunity to participate in the making of the standard. Their comments and other available information have been carefully considered.

The Administrator has concluded that prevention and deterrence of passenger car thefts would substantially reduce the number and seriousness of motor vehicle accidents. Available evidence shows that cars operated by unauthorized persons are far more likely to cause unreasonable risk of accidents, personal injuries and deaths than those which are driven by, or with the permission of, their owners. The incidence of theft and the risk of accidents attributable thereto is increasing. According to a recent study by the Department of Justice, an estimated 94,000 stolen cars were involved in accidents in 1966, and more than 18,000 of these accidents resulted in injury to one or more people. 18.2 percent of the stolen cars became involved in accidents, and 19.6 percent of the stolen-car accidents caused personal injury. The same study predicted that automobile thefts in 1967 would total about 650,000; about 100,000 of these stolen cars would be expected to become involved in accidents. Comparing these figures with statistics for cars which are not stolen, the approximate accident rate for stolen cars would be some 200 times the rate for other cars. Thus, a reduction in the incidence of auto theft would meet the need for motor vehicle safety. It would not only reduce the number of injuries and deaths among those who steal cars, it would also protect the many inno-

cent members of the public who are killed and injured by stolen cars each year.

In its report, "The Challenge of Crime in a Free Society," the President's Commission on Law Enforcement and Administration of Justice noted the rising cost of auto thefts in lives and dollars, highlighted the need for measures to reduce auto thefts and suggested that "The responsibility could well be assigned to the National Highway Safety Agency as part of its program to establish safety standards for automobiles." (pp. 260-261).

The Administrator has decided that the problem of reducing the incidence of automobile thefts should be attacked on a two-pronged basis. On one hand, physical impediments should be placed in the path of potential thieves; to accomplish this, a Motor Vehicle Safety Standard on Theft Protection—Passenger Cars has been promulgated. That standard prescribes automobile equipment which tends physically to defeat an attempted theft. It is equally important to interpose psychological deterrents to automobile theft. A unique identification number affixed to each car in a uniform location and readable from outside the car would serve as such a deterrent. The present standard requires manufacturers to install such a number in each passenger car. When so installed, it will enable law enforcement agencies to find stolen cars and apprehend car thieves with much greater facility than now exists. By confronting a potential thief with the promise of swift and sure apprehension, compliance with the standard will deter him from making off with someone else's automobile. All law enforcement agencies, as well as many other organizations concerned with the rising incidence of car thefts, that responded to the Notice of Proposed Rule Making endorsed the concept of

a visible identification number embodied in the standard. Many of these groups said that the standard would promote efforts to curb unauthorized use of passenger cars. The Administrator has therefore concluded that issuance of the standard will protect the public against the unreasonable risk of accidents stemming from widespread automobile theft.

The Administrator has carefully considered the contention, which some manufacturers advanced, that the standard might actually increase the risk of automobile theft because a thief, armed with ready access to the car's identification number, might thereby obtain a key for its ignition lock. The acquisition of master or identical keys procured through knowledge of a vehicle's identification number is a lengthy and arduous process. Hence, it is a technique that is rarely, if ever, used by amateur thieves whose activities create the greatest risk of stolen-car accidents. Furthermore, as a practical matter, it is possible to utilize this technique only with respect to a relatively small number of cars. The Theft Protection standard, effective January 1, 1970, will result in a larger number of combinations for ignition locks, and this should substantially reduce the effectiveness of master keys. In addition, improved key-control measures can prevent thieves from acquiring duplicate keys simply by knowing the vehicle identification number. On balance, therefore, the Administrator does not agree with those who argue that the standard will not result in an overall reduction in the number of automobile thefts.

The Administrator also rejects the contention that the standard is unnecessary because of the almost universal requirement that all automobiles must bear at least one license plate. Experience has shown that ordinary license plates, located on the outside of a car and installed with screws, are often removed and replaced with other plates. Knowing only the number of the license plates sold to the owner of the stolen car, the police have no sure way of identifying the car when other plates have been attached to it. The standard attempts to overcome this problem by requiring that the car's identification number be affixed with relative permanency.

In addition to license-plate requirements, the laws of many states contain provisions relating

to identifying numbers on motor vehicles. The primary purpose of these state-law requirements is to facilitate the issuance and transfer of titles to motor vehicles. So far as the Administrator is aware, no state provides for a number which is readable from outside a vehicle without opening a door, hood or other part of the vehicle. These state requirements are neither safety standards, nor do they relate directly to the prevention of motor vehicle thefts or the apprehension of thieves. Consequently, the Administrator has concluded that the standard will have no preemptive effect upon such state laws.

Several changes have been made in the form of the standard as it appeared in the Notice of Proposed Rule Making. A number of comments objected to the requirement, as stated in the Notice, that the vehicle identification number must "provide permanent legibility" on the ground that it was unrealistic and unattainable. In response to these comments, the requirement was deleted. The term "permanent structure" was defined to clarify its meaning, in the light of a number of submissions which indicated that some manufacturers were confused about the parts of the automobile that were included within the meaning of the term.

Some comments questioned the requirement that the number must be affixed in such a manner that "removal, replacement, or alteration of the number will show evidence of tampering." The requirement has been deleted. The standard now provides that the number must either be sunk into or embossed upon each car's permanent structure or upon a separate plate that is permanently affixed to the permanent structure. The term "permanently affixed" is used in section 114 of the National Traffic and Motor Vehicle Safety Act, and it was retained in the standard notwithstanding contentions that it was not sufficiently definitive.

The portion of the Notice pertaining to readability of the number (paragraph S4.4) was amended to include the conditions under which the number must be readable. This provision was also redrafted to make it clear that the number must be readable from a position outside the vehicle without moving any part of the vehicle. This precludes placing the number in a location such that, in order to read it, a door,

trunk lid or other portion of the car's body must be opened.

In consideration of the foregoing, section 371.21 of Part 371, Federal Motor Vehicle Safety Standards, is amended by adding Standard No. 115 . . . effective January 1, 1969.

This amendment is made under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C.

1392, 1407) and the delegation of authority of April 24, 1968.

Issued in Washington, D.C., on July 3, 1968.

Lowell K. Bridwell,  
Federal Highway Administrator

**33 F.R. 10207**  
**July 17, 1968**



**MOTOR VEHICLE SAFETY STANDARD NO. 115**  
**Vehicle Identification Number—Passenger Cars**

**S1. Purpose and scope.** This standard specifies requirements for vehicle identification numbers to reduce the incidence of accidents resulting from unauthorized use.

**S2. Application.** This standard applies to passenger cars.

**S3. Definition.**

“Vehicle identification number” means a number consisting of arabic numerals, roman letters, or both, which the manufacturer assigns to the vehicle for identification purposes.

**S4. Requirements.**

**S4.1** Each passenger car shall have a vehicle identification number.

**S4.2** The vehicle identification numbers of two vehicles manufactured by a manufacturer within a ten-year period shall not be identical.

**S4.3** The vehicle identification number of each passenger car shall be sunk into or embossed upon either a part of the vehicle (other than the glazing) that is not designed to be removed except for repair or a separate plate which is permanently affixed to such a part.

**S4.4** The vehicle identification number shall be located inside the passenger compartment and shall be readable, without moving any part of the vehicle, through the vehicle glazing under daylight lighting conditions by an observer having 20/20 vision (Snellen) whose eye-point is located outside the vehicle adjacent to the left windshield pillar.

Effective Date: January 1, 1969.

**33 F.R. 10208**

**July 17, 1968**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 116

### Motor Vehicle Brake Fluids

(Docket No. 70-23; Notice 3)

This notice amends § 571.21 of Title 49, Code of Federal Regulations, Motor Vehicle Safety Standard No. 116, *Motor Vehicle Brake Fluids*, to establish new performance requirements for brake fluid, and to extend its application to all motor vehicles equipped with hydraulic brake systems, and to all brake fluid for use in hydraulic brake systems of motor vehicles. The amendment also establishes requirements for brake fluid containers and labeling of containers.

A notice of proposed amendment to Federal Motor Vehicle Safety Standard No. 116 was published on September 30, 1970 (35 F.R. 15229). Interested persons have been afforded an opportunity to participate in the rulemaking process and their comments have been carefully considered.

The amendment adopts requirements that were proposed for grades DOT 3 and DOT 4 brake fluid, eliminates SAE Type 70R1 brake fluid, specifies more stringent requirements for physical and chemical properties, specifies the use of SAE SBR wheel cylinder cups in testing, and sets forth requirements for brake fluid containers and brake fluid container labeling.

Comments and available data indicated that the proposed DOT 2 type brake fluid is not a commercially available fluid but is manufactured primarily for military use in Arctic regions and that there is no current need for this additional grade of brake fluid. DOT 2 brake fluid has therefore been excluded from the amendment.

Requirements for DOT 3 and DOT 4 grade fluids are adopted as proposed, with a minor modification in the wet boiling point of the DOT 4 grade fluid. The NHTSA has determined that there is a need for two grades of brake fluid until an all-weather fluid is developed with viscosity and boiling point characteristics suit-

able for use in all braking systems. In order to provide an added margin of protection against vapor locking in severe braking service, some car manufacturers may wish to recommend use of a DOT 4 fluid for certain severe conditions. Such recommendations should point out that use of the DOT 4 fluid for improved resistance to vapor locking may result in poorer system performance in very cold weather.

The wet equilibrium reflux boiling point test procedure has been adopted as it represents a measure of the capability of the fluid in service. Tests have been run and data accumulated which demonstrate that this test is sufficiently repeatable to justify its inclusion. However, when sufficient data become available on methods of measuring resistance to vapor lock, this agency may consider proposing a new test procedure.

The proposed low temperature viscosity requirements for the DOT 3 and DOT 4 grade fluids have been adopted unchanged. Adequate data exist to support the need for the specified kinematic viscosities at low temperatures to assure adequate brake system performance in cold weather. Since high boiling points are sacrificed for low viscosities at low temperatures, the differences in kinematic viscosities between DOT 3 and DOT 4 grade fluids are justifiable.

The flash point test proposal has not been adopted because comments indicated that the test is not pertinent to in-use performance characteristics. The NHTSA, however, may re-examine the potential flammability hazard posed by motor vehicle brake fluids at a later date, particularly in the event that central hydraulic systems are introduced.

Brake fluid containers with a capacity of six ounces or more must be provided with a reseal-

able closure to reduce the likelihood of contamination after the initial opening.

The labeling requirements as adopted do not require, in all instances, that the manufacturer's name be placed upon the container. Many comments indicated that the manufacturer cannot be held responsible for the quality of a fluid once it has been transferred to a packager who may contaminate or alter the fluid, and the NHTSA concurs. However, the manufacturer, when he is not the packager, will be required to certify compliance to the packager. The packager will be required to state the name of the manufacturer and the distributor on the container label, either directly or in code. He will be required also to affix a number identifying the packaged lot and date of packaging. It is expected that packagers will keep records sufficient to provide the NHTSA with all identifying information when such is requested. The safety warnings have been reworded to avoid misinterpretations.

Several comments indicated that the proposed effective date of October 1, 1971 would place a hardship on packagers who deal solely in the aftermarket, alleging that lithographed cans must be purchased in quantity. Accordingly, an effective date of March 1, 1972, has been adopted to offer sufficient lead time to insure that all motor vehicle brake fluids manufactured on and after that date will be packaged in containers which meet requirements also effective March 1, 1972.

Petroleum-based fluids are no longer exempted from meeting the requirement of this standard. However, the NHTSA realizes that some manufacturers wish to use these fluids in central power systems and is issuing today an advance notice of proposed rulemaking requesting comments for a suitable performance standard for petroleum-based fluids (Docket No. 71-13; 36 F.R. 12032).

Test procedures adopted are, in general, similar to current ASTM Methods, with SAE

Standards J1702b and J1703b as reference sources. ASTM Methods consulted in developing the test procedures include: E 298-68 "Assay of Organic Peroxides," D 1120-65 "Boiling Point of Engine Antifreezes," D 1121-67 "Reserve Alkalinity of Engine Antifreezes and Antitrusts," D 2240-68 "Indentation Hardness of Rubber and Plastics by Means of a Durometer," D 344-39 "Relative Dry Hiding Power of Paints," D 97-66 "Pour Point," D 1415-68 "International Hardness of Vulcanized Natural and Synthetic Rubbers," E 1-68 "ASTM Thermometers," E 77-66 "Verification and Calibration of Liquid-In-Glass Thermometers," D 2515-66 "Kinematic Glass Viscometers," E 70-68 "pH of Aqueous Solutions with the Glass Electrode," E 29-67 "Indicating Which Places of Figures are to be Considered Significant in Specified Limiting Values," D 1123-59 "Water in Concentrated Engine Antifreezes by the Iodine Reagent Method," D 445-65 "Viscosity of Transparent and Opaque Liquids (Kinematic and Dynamic Viscosities)," D 91-61 "Precipitation Number of Lubricating Oils," and E 96-66 "Water Vapor Transmission of Materials in Sheet Form." SAE Referee Materials (SAE RM) used in testing may be obtained from the Society of Automotive Engineers, Inc., Two Pennsylvania Plaza, New York, N.Y. 10001.

Effective date: March 1, 1972.

In consideration of the foregoing, 49 CFR 571.21, Federal Motor Vehicle Safety Standard No. 116, *Motor Vehicle Brake Fluids*, is amended.

...

Issued on June 16, 1971.

Douglas W. Toms  
Acting Administrator

36 F.R. 11987  
June 24, 1971

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 116

### Motor Vehicle Brake Fluids

(Docket No. 70-23; Notice 4)

Motor Vehicle Safety Standard No. 116, establishing requirements for motor vehicle brake fluids and containers was amended on June 24, 1971 (36 F.R. 11987). Corrections were published on August 11, 1971 (36 F.R. 14742) and August 17, 1971 (36 F.R. 15534). Pursuant to 49 CFR 553.35 (35 F.R. 5119) petitions for reconsideration of the amendment were filed by Automotive Parts and Accessories Association, Inc., Citroen S.A., General Motors Corporation, R. M. Hollingshead Corporation, Union Carbide Corporation, and Wagner Electric Corporation. Subsequently, requests for rulemaking were received from Gold Eagle Products Co., and Union Carbide.

In response to information contained in several of the petitions, and to data recently available to the Administrator, the standard is being amended. The Administrator has declined to grant requested relief from other requirements of the standard.

1. *Deletion of grade DOT 4 fluid.* Wagner Electric petitioned for the deletion of grade DOT 4 fluid, and the adoption of a single minimum standard with the viscosity requirements of grade DOT 4 and the boiling point characteristics of grade DOT 3.

As the Administration noted in the June 24 amendment to Standard No. 116, "there is a need for two grades of brake fluid until an all-weather fluid is developed with viscosity and boiling point characteristics suitable for use in all braking systems." Temperatures of fluids in use in Western mountain driving have reached 295°F., and the Administration deems it essential to retain the DOT 4 fluid, with its minimum wet equilibrium reflux boiling point (ERBP) of 311°F. Accordingly, Wagner's petition is denied.

2. *Deletion or modification of wet ERBP requirements.* Wagner, Union Carbide, and Hollingshead petitioned for the deletion of the wet ERBP requirements on the grounds that the test procedure is not sufficiently reproducible, and that vapor lock temperature is a more appropriate factor to use for determination of operational characteristics of a brake fluid.

The wet ERBP test is based primarily upon the SAE test for determination of the as received boiling point of brake fluid, a test that has been used by industry for years. The major problems in determining water content have been resolved. While the wet ERBP test procedure does not measure actual vapor lock temperature, which is often substantially below that of the wet boiling point, it provides a basis for measuring the in-service capacity of the fluid to resist vapor lock. The petitions are denied.

3. *Petroleum-based and silicone-based fluids.* Standard No. 116 as in effect until March 1, 1972, specifically excludes petroleum-based fluids from its applicability. The amendment of June 24, however, applies to "all brake fluid for use in hydraulic brake systems of motor vehicles," and effectively prohibits the manufacture of petroleum-based and silicone-based fluids whose performance characteristics differ from conventional brake fluids. Although we have asked for comments on appropriate performance requirements for non-hygroscopic fluids (Docket No. 71-13, Notice 1, 36 F.R. 12032), to be incorporated into a standard with a proposed effective date of January 1, 1973, there will be, at a minimum, a 10-month period during which manufacture of these fluids is effectively prohibited. General Motors and Citroen have asked us to reconsider this point, the latter stating that all its vehicles

use a petroleum-based fluid, and that its sales in the U.S. will be effectively curtailed during the hiatus between the two standards.

In the absence of a demonstrable safety problem concerning the use of petroleum-based and silicone-based fluids, the petitions are deemed to have merit and Standard No. 116 is being amended to exclude these fluids from its ambit. We urge manufacturers, however, to take precautions to assure that adverse cross-contamination with hygroscopic fluids does not occur in the absence of appropriate regulations intended to eliminate this hazard.

4. *Labeling requirements.* Automotive Parts and Accessories, General Motors, Hollingshead, Union Carbide, and Wagner Electric petitioned for reconsideration of various portions of the labeling requirements. Gold Eagle also apprised us of problems with labeling requirements.

The petitioners have brought to our attention that packagers may use more than one manufacturer as a source for brake fluid packaged under a single brand name, and that under the present regulation requiring manufacturer identification on the can, packagers will either have to stock duplicate cans or purchase from one source. We initially considered manufacturer identification to be necessary in the event of brake fluid defect notification campaigns. However, it has been determined that the serial number identifying the packaged lot and date of packaging will be sufficient for the packager to identify the manufacturer of any defective fluid, and paragraph S5.2.2.2(b) is being amended to delete manufacturer identification. In response to requests for alternate location of the serial number, S5.2.2.2(d) is being amended to allow the number to be placed below the information by S5.2.2.2(c). An alternate location has also been specified for the information required by S5.2.2.2(b) if it is in code form.

Two petitioners voiced the fear that the safety warning of paragraph S5.2.2.2(g)(1), to follow the vehicle manufacturer's recommendations in adding brake fluid, might result in the promotion by automobile dealers of specified brand names, possibly creating an unfair trade practice. The agency views this possibility as unrelated to motor vehicle safety since presumably all brake

fluid will conform to Standard No. 116. In any event, a change of wording cannot eliminate this possibility, and the petitions are denied.

Petitions were also received requesting that the safety warnings against refilling containers (S5.2.2.2(g)(4)) not apply to storage containers with a capacity in excess of 5 gallons, since containers (30 and 50 gallon sizes, tank cars, etc.) differ from retail sale size cans and are reused for shipping purposes after cleaning. These petitions are granted and S5.2.2.2(g)(4) is being amended accordingly.

5. *Applicability to motor vehicles.* Union Carbide asked whether brake fluid in a vehicle must meet the requirements of Standard No. 116 when the vehicle is sold, pointing out that in extreme cases as long as a year may pass between its manufacture and sale. The NHTSA recognizes that original dry boiling points and viscosity of brake fluid may degrade due to the permeability of the brake system when a vehicle is exposed to the atmosphere over a period of time prior to its first sale for purposes other than resale, and that it is impracticable to require that brake fluid meet Standard No. 116 at time of sale when the "container" is a motor vehicle. Therefore, the standard is being amended so that the main portion applies only to brake fluid, with an added requirement applicable to motor vehicles, that they be equipped either with brake fluid manufactured and packaged in conformity with Standard No. 116, or with petroleum-based or silicone-based brake fluid (new paragraph S5.3).

6. *Resistance to oxidation: preparation.* An amendment to paragraph S6.11.4(b) specifies that the oxidation resistance test is to be conducted not later than 24 hours after the test mixture has been removed from the oven.

7. *Effect on SBR cups: procedure and calculation.* The SAE has also proposed a reduction of the time that the cups and fluid are exposed to oven heat at 70°C. The NHTSA is amending S6.12.4 to reduce exposure time to 70±2 hours, as it has been found that virtually all rubber swell occurs at this temperature during the first 48 hours.

The SAE has also concluded that cups should be retested and remeasured when the base diameters of the tested cups differ by more than

0.10 mm. This agency has determined that averaging four values as the change in base diameter, when a spread greater than 0.10 mm occurs, will result in a more precise determination of whether the requirements of paragraph S5.1.12(a) have been met, and is amending paragraph S6.12.5(a) appropriately.

8. *Typographical errors.* An erroneous standard barometric pressure figure of 750 mm appeared in the subscript of Table III and is being corrected to 760 mm. SAE Standard J1703a, referred to in S7.6, is corrected to read "J1703b."

9. *Interpretations.* Several petitions evidenced confusion over whether sale of fluids manufactured prior to March 1, 1972, will be allowed after that date. Sale of such fluids is permissible on and after March 1, 1972, until supplies are exhausted, with the legal requirement that they conform at time of sale to Standard No. 116 as in effect prior to March 1, 1972.

The agency was also asked whether name of city and zip code is acceptable as the complete mailing address of the distributor, required by paragraph S5.2.2.2(c). A mailing address is considered complete only if it is sufficient for the delivery of mail by the U.S. Postal Service, and containers must be marked accordingly.

Several petitioners asked for a delay to July 1, 1972, of various portions of the labeling requirements of paragraph S5.2.2.2 because of the logistics involved in modifying, in one instance, as many as ninety different labels. A delay in the effective date has not been found to be in the public interest, and the petitions on this point are denied. Gummed labels meeting the requirements of S5.2.2.2, however, may be affixed to these cans until new cans are available.

Finally, several petitioners requested clarification of the container sealing terminology in paragraph S5.2.1. The "inner seal" is the cap liner. Examples of "tamper-proof features" are devices such as a metal insert in the neck of the container, a plastic over-wrap, or a twist-off aluminum cap with a breakaway portion.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 116 in 49 CFR 571.21 is revised. . . .

*Effective date:* March 1, 1972.

Issued on November 8, 1971.

Charles H. Hartman  
Acting Administrator

**36 F.R. 21594**  
**November 11, 1971**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 116**

**Motor Vehicle Brake Fluids**

**(Docket No. 70-23; Notice 5)**

The purpose of this notice is to amend 49 CFR § 571.116, Motor Vehicle Safety Standard No. 116, *Hydraulic Brake Fluids*, to permit certain required information to be placed on any permanent part of brake fluid containers.

Paragraphs S5.2.2.2(b) and S5.2.2.2(d) specify respectively that the name of the packager of the brake fluid, if in code form, and a serial number identifying the packaged lot and date of packaging shall be placed either beneath the distributor's name and mailing address, or on the bottom of the container. Gold Eagle Products Co. has asked if it is permissible to place the information required by S5.2.2.2(b) on the top of square gallon brake fluid containers. Such location is not presently allowed. The Administration, however, has concluded that manufacturers should not be restricted in their choice of location and that if it is more convenient for them to place the required information on the side or top of a container they should be allowed to do so, provided that the information is on a permanent part of the container. Accordingly, the

NHTSA is amending the requirements to allow all required certification, marking and labeling information to be placed in any location except on a removable part such as a lid.

In consideration of the foregoing, paragraph S5.2.2.2 of 49 CFR § 571.116, Motor Vehicle Safety Standard No. 116, is revised in part . . . .

*Effective date:* August 29, 1972. Because the amendment relaxes an existing requirement and creates no additional burden, it is found for good cause shown that an effective date earlier than 180 days after issuance is in public interest.

This notice is issued under the authority of sections 103, 112, and 119 of the National Traffic and Motor Vehicle Traffic Safety Act of 1966 (15 USC 1392, 1401, and 1407) and the delegation of authority at 49 CFR 1.51.

Issued on August 22, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 17474**

**August 29, 1972**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 116

### Motor Vehicle Brake Fluids

(Docket No. 71-13; Notice 3)

This notice amends Motor Vehicle Safety Standard No. 116, *Motor Vehicle Brake Fluids*, 49 CFR § 571.116, to establish container labeling requirements for those fluids that are currently unregulated by the standard. The requirements are effective July 1, 1973.

The amendment is based upon a notice published March 22, 1972, (37 F.R. 5825). The NHTSA proposed labeling requirements for "central hydraulic system oil" and "silicone-based brake fluid", similar to requirements already in existence for conventional hydraulic brake fluids. The packager would be required to place his name on the container. His name could appear in code form. The packager would also be required to provide the complete name and mailing address of the distributor, a serial number identifying the packaged lot and date of packaging of the fluid, description of the contents, and certain safety warnings.

The comments received generally supported the proposal, and Standard No. 116 is being amended accordingly. The term "central hydraulic system oil" has not been adopted as some central hydraulic systems are designed for use of DOT brake fluids. Instead, the term "hydraulic system mineral oil" is adopted. It is defined as "a mineral-oil-based fluid designed primarily for use in motor vehicle brake systems in which none of the components contacting the fluid are SBR, EPDM, Neoprene, or natural rubber". Paragraphs S3, S5, S5.1, S5.2.2.1, and S5.2.2.2 are being amended in a manner that more clearly evidences the NHTSA's intent that Standard No. 116 applies to all fluid used as brake fluids, but that silicone-based brake fluids and hydraulic system mineral oil are currently

excepted from performance, container, and labeling requirements applicable to DOT fluids. A new S5.2.2.3 specifies the labeling requirements for packagers of silicone-based brake fluids and hydraulic system mineral oil, and these generally parallel those required of packagers of DOT fluids. Packagers of hydraulic system mineral oil must furnish the additional warning that the fluid is not compatible with the rubber components of brake systems designed for use with DOT brake fluids.

The amendment also differs from the proposal in reflecting the revision of Standard No. 116 of August 29, 1972 (37 F.R. 17474) that allows information to be placed on a container "in any location except on a removable part such as a lid." Minor changes have been made in the text of the warning on fluid storage so that it is identical with the warning required for DOT fluids.

In consideration of the foregoing, 49 CFR § 571.116, Motor Vehicle Safety Standard No. 116, is amended. . . .

*Effective date:* July 1, 1973. Because these amendments relate to labeling requirements that do not entail product redesign, an effective date less than 180 days after the issue date is found to be in the public interest.

(Secs. 103, 112, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1407; delegation of authority at 49 CFR 1.51.)

Issued on: January 4, 1973.

Douglas W. Toms  
Administrator

38 F.R. 2981  
January 31, 1973



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 116

### Motor Vehicle Brake Fluids

(Docket No. 71-13; Notice 4)

This notice responds to a petition for reconsideration of brake fluid container labeling requirements by amending 49 CFR § 571.116 in minor respects.

Motor Vehicle Safety Standard No. 116, *Motor Vehicle Brake Fluids*, was amended on January 31, 1973, (33 F.R. 2981) to establish container labeling requirements for those fluids that are currently unregulated by the standard. Thereafter, a petition for reconsideration of the amendment was filed by General Motors Corporation pursuant to 49 CFR § 553.35. In response to the petition minor amendments are made to the standard.

General Motors believes that the NHTSA has not clearly indicated which mineral oil used in vehicle hydraulic systems must meet Standard No. 116. Hydraulic system mineral oil has been defined in part as a fluid "designed primarily for use in motor vehicle brake systems . . ." GM asserts that it is not clear whether a fluid "for use in a central hydraulic system composed of the power brake boost and the power steering systems must be considered *primarily* as a brake system application or *primarily* as a power steering system application." GM believes that since the power brake system is an auxiliary system whose fluids operate in a different environment than those in the primary system the standard should not include hydraulic boost system mineral oils.

The NHTSA intends the definition of hydraulic system mineral oil to include fluids used in any type of brake system regardless of the configuration. This definition must include fluids used in any hydraulic brake boost unit whose design is such that when a component fails, the boost unit fluid enters the master cylinder reser-

voir, hence contaminating the entire brake system. Such fluid must meet the applicable requirements of Standard No. 116. Fluids for use in systems where a failure will not introduce them into the master cylinder reservoir are not covered by Standard No. 116. The word "primarily" is being deleted from the definition of hydraulic system mineral oil to remove any doubt on this point.

GM points out that the warning a mineral oil manufacturer is currently required to provide refers to the oil as "brake fluid," in the container warning statements specified by the standard. Since mineral oil is not compatible with conventional or silicone-based brake fluid, GM believes it essential that it not be referred to as "brake fluid". The NHTSA concurs and is granting GM's petition by amending the labeling requirements concerned.

In consideration of the foregoing, 49 CFR § 571.116 Motor Vehicle Safety Standard No. 116 is amended. . . .

*Effective Date:* July 1, 1973. Because these amendments relate to labeling requirements that do not entail product redesign, an effective date less than 180 days after the issue date is found to be in the public interest.

(Sec. 103, 112, 119, Pub. L. 89-563, 80 Stat 718, 15 USC 1392, 1401, 1407; Delegation of Authority at 38 F.R. 12147).

Issued on: May 11, 1973.

James E. Wilson  
Associate Administrator  
Traffic Safety Programs

**38 F.R. 12922**  
**May 17, 1973**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 116

### Motor Vehicle Brake Fluids

(Docket No. 71-13; Notice 6)

This notice amends 49 CFR 571.116, Motor Vehicle Safety Standard No. 116, *Motor Vehicle Brake Fluids*, to specify performance requirements for a low-water-tolerance (DOT 5) grade brake fluid, effective October 1, 1974, and to require a color coding system for all brake fluids and hydraulic system mineral oils, effective May 1, 1975, to safeguard against intermixing of incompatible fluids.

A notice of proposed rulemaking on this subject was published on November 21, 1973 (38 F.R. 32142), and an opportunity afforded for comment. The notice proposed performance requirements for brake fluids of low water tolerance, which would include but not be limited to silicone-based brake fluids. The notice also proposed a minor revision in the test procedures for determining cloudiness and lack of clarity in all brake fluids. Finally, the NHTSA proposed color coding for brake fluids and their containers as an appropriate method to prevent any brake system contamination. As the amendments adopted are substantially similar to those proposed, interested persons may refer to the notice which contains a full discussion of the proposals and the NHTSA's rationale for them.

A substantial number of comments submitted in response objected to either the idea of requiring a color coding system or the actual colors proposed for the different grades of fluid. The NHTSA considers that a properly implemented color coding system of fluids, containers, and reservoirs is an appropriate method of preventing brake system contamination. However, it realizes that sufficient time must be allotted to effect an orderly changeover and, therefore, these requirements have a delayed effective date. Several commenters requested modifications to spe-

cific color coding requirements. Citroen asked that the color green be permitted as an optional alternative to red for identifying mineral oils, based on its established use of this color in central hydraulic systems since 1965. This request has been denied in the interest of uniformity to minimize the possibility of inadvertent mixing of incompatible fluids. Several manufacturers of conventional glycol-type fluids stated that corrosion inhibitors and antioxidants often impart a reddish brown or straw color to the completed fluid prohibiting compliance with the proposed color ranges. In view of this information, the color range for DOT 3 and DOT 4 fluids has been broadened to allow variations from clear to amber, except for the container border which must be yellow. Further, it has been determined that visual inspection for color compliance is adequate, and the proposed wavelength bands have been deleted.

The other main issue raised was the use of the term "low water tolerance" when referring to silicone based brake fluids. Many commenters felt that the phrase "water intolerant" would more accurately describe the silicone fluids in light of the fact that the water tolerance test for DOT 5 fluids does not demand the absorption or retention of a specified percentage of water. DOT 5 grade fluid, however, is not limited to silicone based brake fluids. The term "low water tolerance" is found to be the most satisfactory description for a range of fluids potentially meeting the DOT 5 requirements and which may vary in water tolerance from 0.01% to 3.0%.

Several commenters pointed out that the chemical stability test of S6.5.4 is not applicable to DOT 5 fluids. The NHTSA concurs, and finds that the elimination of a chemical stability re-

quirement for DOT 5 fluids will not significantly compromise safety. The standard has been amended accordingly.

The U.S. Army Chemical and Coating Laboratory and Bendix Corporation both submitted comments which requested that the low temperature viscosity requirement be established at a lower temperature, for instance  $-67^{\circ}$  F., or that the maximum viscosity at  $-40^{\circ}$  F. be set at 600 cSt. Both comments were constructive, one relating the operational characteristics of silicone fluids at temperatures of  $-67^{\circ}$  F. and below and the other relating the necessary operational properties for the proper functioning of anti-lock systems at low temperatures. They are outside the scope of the proposal, however, and the NHTSA will consider these matters in future rulemaking.

In consideration of the foregoing, 49 CFR 571.116, Motor Vehicle Safety Standard No. 116, *Motor Vehicle Brake Fluids*, is amended. . . .

*Effective date:* October 1, 1974, with certain requirements effective May 1, 1975, as noted therein. Brake fluid of the type regulated by this standard is presently prohibited by the regulations of several States, and evidently is not being produced and sold for commercial purposes. The effect of this amendment, therefore, is to permit what was previously prohibited, and an effective date earlier than 180 days from the date of issuance is found for good cause shown to be in the public interest.

(Secs. 103, 112, 119, Pub. L. 89-563, 80 Stat. 718; 15 U.S.C. 1392, 1401, 1427; delegation of authority at 49 CFR 1.51.)

Issued on August 16, 1974.

James B. Gregory  
Administrator

**39 F.R. 30353**  
**August 22, 1974**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 116

### Motor Vehicle Brake Fluids

(Docket No. 71-13; Notice 8)

This notice partially responds to petitions for reconsideration of amendments to 49 CFR 571.116 Motor Vehicle Safety Standard No. 116, *Motor Vehicle Brake Fluids*, that were published in the *Federal Register* on August 22, 1974 (39 FR 30353, as corrected at 32759). The standard is further amended to delete the requirements that were to have become effective May 1, 1975 for brake fluid color and for a color border around safety warnings on brake fluid container labels.

Standard No. 116 requires effective May 1, 1975, that DOT 3 and DOT 4 fluids be clear to amber in color, DOT 5 be blue, and hydraulic system mineral oil be red. For Motor Company petitioned for a reconsideration of the color requirements, asking that DOT 5 be clear or silver. Officine Alfieri Maserati, S.A. Automobili Citroen, and U.S. Technical Research Corporation have asked that the color of hydraulic system mineral oil be changed from red to green. Other petitioners requested a delay in the effective date for color coding. Obviously a change in the color of the fluid would require a corresponding change in the color of the borders on container labels.

Consideration of these and other arguments by petitioners have delayed a formal response to the amendments of August 22, 1974. If the NHTSA determines that a petition for change of fluid color has merit, it will propose the change, in

order to have the benefit of public comment, rather than amending the standard without notice. In the meantime, to alleviate the problems of manufacturers faced with the immediate need to order container labels, the NHTSA is amending the standard to delete the color requirements for fluid and container labeling. The deletion is only intended to be a temporary one, until the response to the petitions for reconsideration of the amendments of August 22, 1974 is published. A new effective date creating a leadtime of not less than 180 days will then be proposed.

In consideration of the foregoing 49 CFR 571.116 Motor Vehicle Safety Standard No. 116 is amended. . . .

*Effective date:* March 25, 1975. Because the amendment relieves a restriction and creates no additional burden, it is found for good cause shown that an effective date earlier than 180 days after issuance is in the public interest.

(Sec. 103, 112, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1427); delegation of authority at 49 CFR 1.51).

Issued on March 19, 1975.

James B. Gregory  
Administrator

**40 F.R. 13219**  
**March 25, 1975**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 116

### Motor Vehicle Brake Fluids

(Docket No. 71-13; Notice 9)

This notice further responds to petitions for reconsideration of amendments to 49 CFR 571.116, Motor Vehicle Safety Standard No. 116, *Motor Vehicle Brake Fluids*, that were published in the *Federal Register* on August 22, 1974 (39 FR 30353, as corrected at 39 FR 32739). A partial response deleting color coding requirements was published on March 25, 1975 (40 FR 13219). This notice amends the standard in minor respects.

Petitions were received from General Motors Corporation, Ford Motor Company, Wagner Electric Corporation, Officine Alfieri Maserati, S.A. Automobiles Citroen, and U.S. Technical Research Corporation. Late-filed petitions were received from EIS Automotive and the Bell Company and in accordance with 49 CFR 553.31 they have been treated as petitions for rulemaking. The issues raised by the petitions and their disposition are set forth below.

*Revocation.* Ford petitioned to revoke the amendments adding DOT 5 brake fluids, because "it has reason to believe that they are incompatible with at least some of the brake systems currently used on Ford vehicles." Specifically Ford argues that the fluids "may cause hazardous deterioration of brake systems or their components." In support Ford referenced a recent letter from Bendix to the Non-Conventional Brake Fluid Task Group of the Society of Automotive Engineers, describing a series of tests conducted with silicone brake fluid "in a hydrovac brake system typical of the system used in some Ford products." NHTSA has learned that Bendix subsequently informed SAE that the tests were erroneously reported and recommended further testing. This agency finds that good cause

has not been shown for the revocation, and Ford's petition is denied.

Ford also commented that DOT 5 fluid would not have sufficient electrical conductivity to permit the operation of its intended brake fluid level sensor to meet a requirement of Motor Vehicle Safety Standard No. 105-75 *Hydraulic Brake Systems*. The NHTSA regards this as a design problem, peculiar to Ford, that is outweighed by the safety advantages of allowing motor vehicle manufacturers and motorists the option of choosing a low-water-tolerant brake fluid. Ford's petition is denied.

*Fluid color.* A discussion of issues raised by the petitions for reconsideration of fluid color and labeling will be contained in a notice of proposed rulemaking on this subject to be published shortly. (Docket No. 71-13; Notice 10).

*Minor amendments.* An editorial error in the amendment to paragraph S5.1.5.2 published on September 11, 1974 (39 FR 32739) is corrected. Paragraph S5.2.2.3 is amended to remove superfluous references to "brake fluid." Paragraph S6.7.3(a) is amended to include a reference to isopropanol. Finally, to agree with a change made in S6.12.4 (39 FR 21599) S6.12.1 is corrected by changing a reference to "120 hours" to "70 hours."

In consideration of the foregoing 49 CFR 571.116 Motor Vehicle Safety Standard No. 116 is amended. . . .

*Effective date:* May 16, 1975. Because the amendments correct errors and create no additional burden on any person it is found for good cause shown that an immediate effective date is in the public interest.

Effective: May 16, 1975

(Sec. 103, 112, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1407); delegation of authority at 49 CFR 1.51).

Issued on May 12, 1975.

James B. Gregory  
Administrator

40 F.R. 21474

May 16, 1975

## MOTOR VEHICLE SAFETY STANDARD NO. 116

### Motor Vehicle Brake Fluids—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, Buses, and Motorcycles, and Brake Fluid and Brake Fluid Containers

(Docket No. 70-23; Notice 3)

**S1. Scope.** This standard specifies requirements for brake fluids for use in hydraulic brake systems of motor vehicles, brake fluid containers, and brake fluid container labeling.

**S2. Purpose.** The purpose of this standard is to reduce failures in the hydraulic braking systems of motor vehicles which may occur because of the manufacture or use of improper or contaminated brake fluid.

**S3. Application.** [This standard applies to all fluid for use in hydraulic brake systems of motor vehicles. In addition, S5.3 applies to passenger cars, multipurpose passenger vehicles, trucks, buses, trailers, and motorcycles. (38 F.R. 2981—January 31, 1973. Effective: 7/1/73)]

#### S4. Definitions.

“Blister” means a cavity or sac on the surface of a brake cup.

“Chipping” means a condition in which small pieces are missing from the outer surface of a brake cup.

“Hydraulic system mineral oil” means a mineral-oil-based fluid designed for use in motor vehicle brake systems in which none of the components contacting the fluid are SBR, EPDM, Neoprene, or natural rubber. (38 F.R. 12922—May 17, 1973. Effective: 7/1/73)]

“Duplicate samples” means 2 samples of brake fluid taken from a single packaged lot and tested simultaneously.

“Packager” means any person who fills containers with brake fluid that are subsequently distributed for retail sale.

“Packaged lot” is that quantity of brake fluid shipped by the manufacturer to the packager in a single container, or that quantity of brake fluid manufactured by a single plant run of 24 hours

or less, through the same processing equipment and with no change in ingredients.

“Scuffing” means a visible erosion of a portion of the outer surface of a brake cup.

“Sloughing” means degradation of a brake cup as evidenced by the presence of carbon black loosely held on the brake cup surface, such that a visible black streak is produced when the cup, with a  $500 \pm 10$  gram dead weight on it, is drawn base down over a sheet of white bond paper placed on a firm flat surface.

“Stickiness” means a condition on the surface of a brake cup such that fibers will be pulled from a wad of U. S. P. absorbent cotton when it is drawn across the surface.

**S5. Requirements.** [This section specifies requirements for DOT brake fluids (grades DOT 3, DOT 4, and DOT 5), brake fluid containers, and brake fluid container labeling. Where a range of tolerances is specified, the brake fluid must be capable of meeting the requirements at all points within the range. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

**S5.1 Motor vehicle brake fluid.** [When tested in accordance with S6, motor vehicle brake fluids other than hydraulic system mineral oil shall meet the following requirements. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

**S5.1.1 Equilibrium reflux boiling point (ERBP).** When brake fluid is tested according to S6.1, the ERBP shall not be less than the following value for the grade indicated:

(a) DOT 3: 205° C. (401° F.).

(b) DOT 4: 230° C. (446° F.).

[(c) DOT 5: 260° C. (500° F.). (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

**55.1.2 Wet ERBP.** When brake fluid is tested according to S6.2, the wet ERBP shall not be less than the following value for the grade indicated:

- (a) DOT 3: 140° C. (284° F.).
- (b) DOT 4: 155° C. (311° F.).

[(c) DOT 5 : 180° C. (356° F.). (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

**55.1.3 Kinematic viscosities.** When brake fluid is tested according to S6.3, the kinematic viscosities in centistokes (cSt) at stated temperatures shall be neither less than 1.5 cSt at 100° C. (212° F.) nor more than the following maximum value for the grade indicated:

- (a) DOT 3: 1500 cSt at minus 40° C. (minus 40° F.).
- (b) DOT 4: 1800 cSt at minus 40° C. (minus 40° F.).
- (c) [DOT 5 : 900 cSt at minus 40° C. (minus 40° F.). F.R. 30353—August 22, 1974. Effective: 10/1/74)]

**55.1.4 pH value.** [When DOT 3 or DOT 4 brake fluid is tested according to S6.4, the pH value shall not be less than 7.0 nor more than 11.5. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

**55.1.5 Brake fluid stability.**

**55.1.5.1 High-temperature stability.** When brake fluid is tested according to S6.5.3 the ERBP shall not change by more than 3.0° C. (5.4° F.) plus 0.05 degree for each degree that the ERBP of the fluid exceeds 225° C. (437° F.).

**55.1.5.2 Chemical stability.** [When DOT 3 or DOT 4 brake fluid is tested according to S6.5.4, the change in temperature of the refluxing fluid mixture shall not exceed 3.0°C (5.4°F) plus 0.05 degree for each degree that the ERBP of the fluid exceeds 225°C (437°F). (40 F.R. 21474—May 16, 1975. Effective 5/16/75)]

**55.1.6 Corrosion.** When brake fluid is tested according to S6.6—

- (a) The metal test strips shall not show weight changes exceeding the limits stated in Table I.

<i>Test strip material</i>	<i>Max. permissible weight change, mg/sq cm of surface</i>
Steel, Tinned Iron, Cast Iron	0.2
Aluminum	0.1
Brass, Copper	0.4

(b) Excluding the area of contact (13±1mm. (1/2±1/32 inch) measured from the bolt hole end of the test strip), the metal test strips shall not show pitting or etching to an extent discernible without magnification;

(c) [The water-wet brake fluid at the end of the test shall show no jelling at 23±5° C. (73.4±9° F.); (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(d) No crystalline deposit shall form and adhere to either the glass jar walls or the surface of the metal strips;

(e) [At the end of the test, sedimentation of the water-wet brake fluid shall not exceed 0.10 percent by volume; (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(f) [The pH value of water-wet DOT 3 and DOT 4 brake fluid at the end of the test shall not be less than 7.0 nor more than 11.5; (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(g) The cups at the end of the test shall show no disintegration, as evidenced by blisters or sloughing;

(h) The hardness of the cup shall not decrease by more than 15 International Rubber Hardness Degrees (IRHD); and

(i) The base diameter of the cups shall not increase by more than 1.4 mm. (0.055 inch).

**55.1.7 Fluidity and appearance at low temperature.** When brake fluid is tested according to S6.7, at the storage temperature and for the storage times given in Table II—

(a) [The fluid shall show no sludging, sedimentation, crystallization, or stratification; (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(b) [Upon inversion of the sample bottle, the time required for the air bubble to travel to the top of the fluid shall not exceed the bubble flow times shown in Table II; and (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(c) [On warming to room temperature, the fluid shall resume the appearance and fluidity that it had before chilling. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

Storage temperature	Storage time (hours)	Max. bubble flow time (seconds)
minus 40±2° C. (minus 40±3.6° F.)	144±4.0	10
minus 50±2° C. (minus 58±3.6° F.)	6±0.2	35

**55.1.8 Evaporation.** When brake fluid is tested according to S6.8—

(a) The loss by evaporation shall not exceed 80 percent by weight;

(b) The residue from the brake fluid after evaporation shall contain no precipitate that remains gritty or abrasive when rubbed with the fingertip; and

(c) The residue shall have a pour point below minus 5° C. (+23° F.).

**55.1.9 Water tolerance.**

(a) *At low temperature.* When brake fluid is tested according to S6.9(a)—

(1) [The fluid shall show no sludging, sedimentation, crystallization, or stratification; (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(2) [Upon inversion of the centrifuge tube, the air bubble shall travel to the top of the fluid in not more than 10 seconds; (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(3) [If cloudiness has developed, the wet fluid shall regain its original clarity and fluidity when warmed to room temperature; and (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(b) *At 60° C. (140° F.).* When brake fluid is tested according to S6.9(b)—

(1) The fluid shall show no stratification; and

(2) Sedimentation shall not exceed 0.15 percent by volume after centrifuging.

**55.1.10 Compatibility.**

[(a) *At low temperature.* When brake fluid is tested according to S6.10.3(a) the test specimen shall show no sludging, sedimentation, or crystallization. In addition DOT 3 and DOT 4 fluids shall show no stratification.

(b) *At 60° C. (140° F.).* When brake fluid is tested according to S6.10.3(b)—

(1) Sedimentation shall not exceed 0.05 percent by volume after centrifuging; and

(2) DOT 3 and DOT 4 fluids shall show no stratification. (39 F.R. 30353—August 22, 1974. (Effective: 10/1/74)]

**55.1.11 Resistance to oxidation.** When brake fluid is tested according to S6.11—

(a) The metal test strips outside the areas in contact with the tinfoil shall not show pitting or etching to an extent discernible without magnification;

(b) No more than a trace of gum shall be deposited on the test strips outside the areas in contact with the tinfoil;

(c) The aluminum strips shall not change in weight by more than 0.05 mg/sq cm; and

(d) The cast iron strips shall not change in weight by more than 0.3 mg/sq cm.

**55.1.12 Effects on cups.** When brake cups are subjected to brake fluid in accordance with S6.12(a) and (b)—

(a) The increase in the diameter of the base of the cups shall be not less than 0.15 mm (0.006 inch) or more than 1.40 mm (0.055 inch);

(b) The decrease in hardness of the cups shall be not more than 10 IRHD at 70° C. (158° F.) or more than 15 IRHD at 120° C. (248° F.), and there shall be no increase in hardness of the cups; and

(c) The cups shall show no disintegration as evidenced by stickiness, blisters, or sloughing.

**55.1.13 Stroking properties.** When brake fluid is tested according to S6.13—

(a) Metal parts of the test system shall show no pitting or etching to an extent discernible without magnification;

(b) The change in diameter of any cylinder or piston shall not exceed 0.13 mm (0.005 inch);

(c) The average decrease in hardness of nine of the ten cups tested (eight wheel cylinder and

one master cylinder primary) shall not exceed 15 IRHD. Not more than one of the nine cups shall have a decrease in hardness greater than 17 IRHD;

(d) None of the ten cups shall be in an unsatisfactory operating condition as evidenced by stickiness, scuffing, blisters, cracking, chipping, or other change from its original appearance;

(e) None of the ten cups shall show an increase in base diameter greater than 0.90 mm (0.035 inch);

(f) The average lip diameter set of the ten cups shall not be greater than 65 percent;

(g) During any period of 24,000 strokes, the volume loss of fluid shall not exceed 36 milliliters;

(h) The cylinder pistons shall not freeze or function improperly throughout the test;

(i) The total loss of fluid during the 100 strokes at the end of the test shall not exceed 36 milliliters;

(j) The fluid at the end of the test shall show no formation of gels;

(k) At the end of the test the amount of sediment shall not exceed 1.5 percent by volume; and

(l) Brake cylinders shall be free of deposits that are abrasive or that cannot be removed when rubbed moderately with a nonabrasive cloth wetted with ethanol.

## **55.2 Packaging and labeling requirements for motor vehicle brake fluids.**

**55.2.1 Container sealing.** [Each brake fluid or hydraulic system mineral oil container with a capacity of 6 fluid ounces or more shall be provided with a resealable closure that has an inner seal impervious to the packaged brake fluid. The container closure shall include a tamper-proof feature that will either be destroyed or substantially altered when the container closure is initially opened. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

## **55.2.2 Certification, marking, and labeling.**

**55.2.2.1** [Each manufacturer of a DOT grade brake fluid shall furnish to each packager, distributor, or dealer to whom he delivers brake

fluid, the following information: (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(a) A serial number identifying the production lot and the date of manufacture of the brake fluid.

(b) [The grade (DOT 3, DOT 4, or DOT 5) of the brake fluid. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(c) The minimum wet boiling point in Fahrenheit of the brake fluid.

(d) Certification that the brake fluid conforms to Federal Motor Vehicle Safety Standard No. 116.

**55.2.2.2** [Each packager of a brake fluid other than hydraulic system mineral oil shall furnish the following information clearly and indelibly marked on each brake fluid container, in any location except a removable part such as a lid. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(a) Certification that the brake fluid conforms to Federal Motor Vehicle Safety Standard No. 116.

(b) [The name of the packager of the brake fluid, which may be in code form. (37 F.R. 17474—August 29, 1972. Effective: 8/29/72)]

(c) The name and complete mailing address of the distributor.

(d) [A serial number identifying the packaged lot and date of packaging. (37 F.R. 17474—August 29, 1972. Effective: 8/29/72)]

[ (e) Designation of the contents as "DOT — — MOTOR VEHICLE BRAKE FLUID" (Fill in "3", "4", or "5" as applicable.)

(f) The minimum wet boiling point in Fahrenheit of the DOT brake fluid in the container.

(g) The following safety warnings in capital and lower case letters as indicated: (40 F.R. 13219—March 25, 1975. Effective: 3/25/75)]

(1) FOLLOW VEHICLE MANUFACTURER'S RECOMMENDATIONS WHEN ADDING BRAKE FLUID.

(2) KEEP BRAKE FLUID CLEAN AND DRY. Contamination with dirt, water, petroleum products or other materials may result in brake failure or costly repairs.

(3) STORE BRAKE FLUID ONLY IN ITS ORIGINAL CONTAINER. KEEP CONTAINER CLEAN AND TIGHTLY CLOSED TO PREVENT ABSORPTION OF MOISTURE.

(4) **CAUTION: DO NOT REFILL CONTAINER, AND DO NOT USE FOR OTHER LIQUIDS.** [(Not required for containers with a capacity in excess of 5 gallons). (36 F.R. 21594—Nov. 11, 1971. Effective: 3/1/72)]

**55.2.2.3** [Each packager of hydraulic system mineral oil shall furnish the following information clearly and indelibly marked on each container in any location except a removable part such as a lid:

(a) The name of the packager of the hydraulic system mineral oil, which may be in code form. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(b) The name and complete mailing address of the distributor.

(c) A serial number identifying the packaged lot and date of packaging.

(d) [Designation of the contents as "HYDRAULIC SYSTEM MINERAL OIL" in capital letters at least  $\frac{1}{8}$  of an inch high. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(e) [The following safety warnings in capital and lower case letters as indicated: (40 F.R. 13219—March 25, 1975. Effective: 3/25/75)]

(1) [FOLLOW VEHICLE MANUFACTURER'S RECOMMENDATIONS WHEN ADDING HYDRAULIC SYSTEM MINERAL OIL. (40 F.R. 21474—May 16, 1975. Effective: 5/16/75)]

(2) [Hydraulic System Mineral Oil is *NOT COMPATIBLE* with the rubber components of brake systems designed for use with DOT brake fluids. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(3) [KEEP HYDRAULIC SYSTEM MINERAL OIL CLEAN. Contamination with dust or other materials may result in brake failure or costly repair.

(4) **CAUTION: STORE HYDRAULIC SYSTEM MINERAL OIL ONLY IN ITS ORIGINAL CONTAINER. KEEP CON-**

**TAINER CLEAN AND TIGHTLY CLOSED. DO NOT REFILL CONTAINER OR USE OTHER LIQUIDS.** (The last sentence is not required for container with a capacity in excess of 5 gallons.) (40 F.R. 21474—May 16, 1975. Effective: 5/16/75)]

**55.3 Motor vehicle requirement.** [Each passenger car, multipurpose passenger vehicle, truck, bus, trailer, and motorcycle that has a hydraulic brake system shall be equipped with brake fluid that has been manufactured and packaged in conformity with the requirements of this standard. (38 F.R. 2981—January 31, 1973. Effective: 7/1/73)]

## 56. Test procedures.

**56.1 Equilibrium reflux boiling point.** Determine the ERBP of a brake fluid by running duplicate samples according to the following procedure and averaging the results.

**56.1.1 Summary of procedure.** Sixty milliliters (ml) of brake fluid are boiled under specified equilibrium conditions (reflux) at atmospheric pressure in a 100-ml flask. The average temperature of the boiling fluid at the end of the reflux period, corrected for variations in barometric pressure if necessary, is the ERBP.

**56.1.2 Apparatus.** (See Figure 1) The test apparatus shall consist of—

(a) *Flask.* (See Figure 2) A 100-ml round-bottom, short-neck heat-resistant glass flask having a neck with a 19/38 standard taper, female ground-glass joint and a side-entering tube, with an outside diameter of 10 millimeters (mm), which centers the thermometer bulb in the flask 6.5 mm from the bottom;

(b) *Condenser.* A water-cooled, reflux, glass-tube type, condenser having a jacket 200 mm in length, the bottom end of which has a 19/38 standard-taper, drip-tip, male ground-glass joint;

(c) *Boiling stones.* Three clean, unused silicon carbide grains (approximately 2 mm (0.08 inch) in diameter, grit No. 8);

(d) *Thermometer.* Standardized calibrated partial immersion (76 mm), solid stem, thermometers conforming to the requirements for an

ASTM 2C or 2F, and an ASTM 3C or 3F thermometer; and

(e) *Heat source.* Variable autotransformer-controlled heating mantle designed to fit the flask, or an electric heater with rheostat heat control.

**S6.1.3 Preparation of apparatus.**

(a) Thoroughly clean and dry all glassware.

(b) Insert thermometer through the side tube until the tip of the bulb is 6.5 mm ( $\frac{1}{4}$  inch) from the bottom center of the flask. Seal with a short piece of natural rubber, EPDM, SBR or butyl tubing.

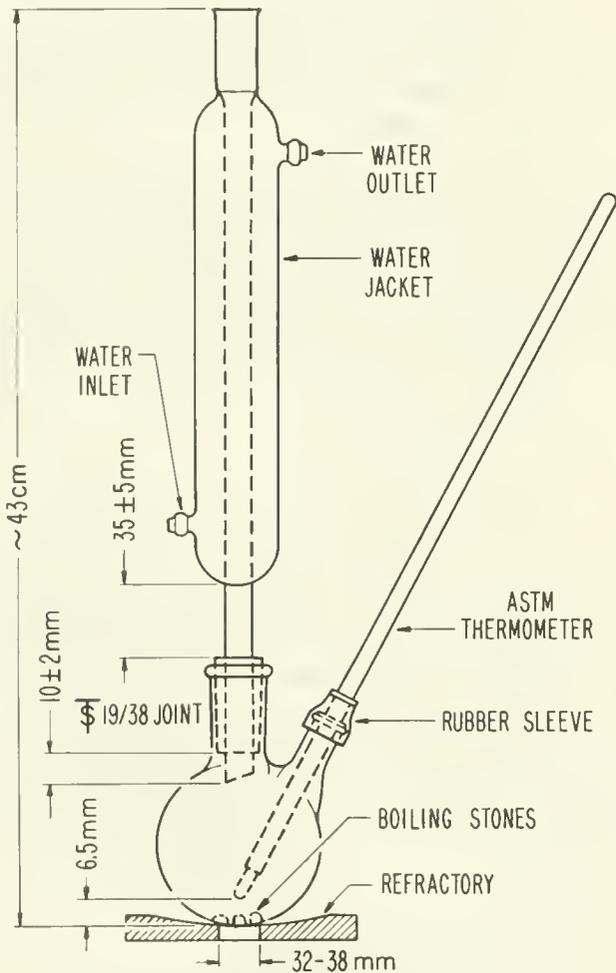


FIG. 1  
BOILING POINT TEST APPARATUS

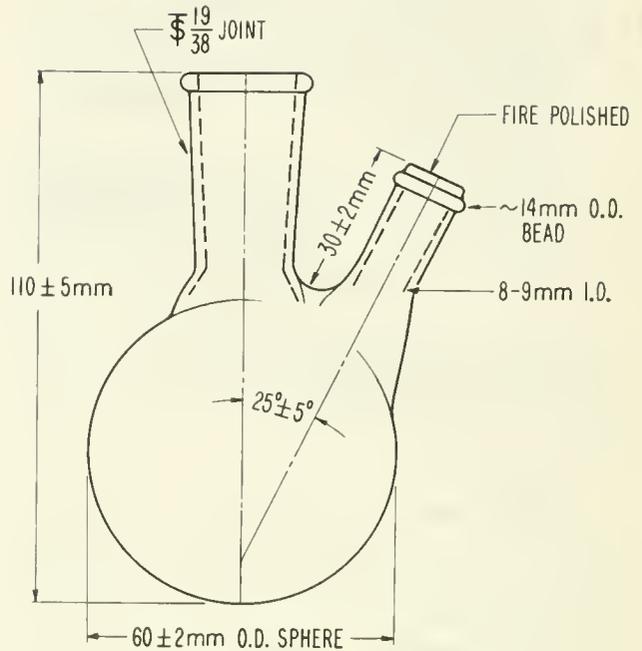


FIG. 2  
DETAIL OF 100ml SHORT-NECK FLASK

(c) Place  $60 \pm 1$  ml of brake fluid and the silicon carbide grains into the flask.

(d) Attach the flask to the condenser. When using a heating mantle, place the mantle under the flask and support it with a ring-clamp and laboratory-type stand, holding the entire assembly in place by a clamp. When using a rheostat-controlled heater, center a standard porcelain or hard asbestos refractory, having a diameter opening 32 to 38 mm, over the heating element and mount the flask so that direct heat is applied only through the opening in the refractory. Place the assembly in an area free from drafts or other types of sudden temperature changes. Connect the cooling water inlet and outlet tubes to the condenser. Turn on the cooling water. The water supply temperature shall not exceed  $28^\circ \text{C}$ . ( $82.4^\circ \text{F}$ .) and the temperature rise through the condenser shall not exceed  $2^\circ \text{C}$ . ( $3.6^\circ \text{F}$ .)

**S6.1.4 [Procedure for preparation of apparatus.]** Apply heat to the flask so that within  $10 \pm 2$  minutes the fluid is refluxing in excess of 1 drop per second. The reflux rate shall not exceed 5

drops per second at any time. Immediately adjust the heating rate to obtain an equilibrium reflux rate of 1 to 2 drops per second over the next  $5 \pm 2$  minutes. Maintain this rate for an additional 2 minutes, taking four temperature readings at 30-second intervals. Record the average of these as the observed ERBP. If no reflux is evident when the fluid temperature reaches  $260^\circ \text{C}$ . ( $500^\circ \text{F}$ .), discontinue heating and report ERBP as in excess of  $260^\circ \text{C}$ . ( $500^\circ \text{F}$ .). (39 F.R. 30353—August 22, 1974. Effective: 10/1/74) ]

### S6.1.5 Calculation.

(a) *Thermometer inaccuracy.* Correct the observed ERBP by applying any correction factor obtained in standardizing the thermometer.

(b) *Variation from standard barometric pressure.* Apply the factor shown in Table III to calculate the barometric pressure correction to the ERBP.

TABLE III.—Correction For Barometric Pressure

Observed ERBP corrected for thermometer inaccuracy	Correction per 1 mm difference in pressure* (°F.)	
100° C. (212° F.) to 190° C. (374° F.)	0.039	(0.07)
Over 190° C. (374° F.)	0.04	(0.08)

\*To be added in case barometric pressure is below 760 mm; to be subtracted in case barometric pressure is above 760 mm.

(c) If the two corrected observed ERBP's agree within  $2.0^\circ \text{C}$ . ( $4.0^\circ \text{C}$ . for brake fluids having an ERBP over  $230^\circ \text{C}$ ./ $446^\circ \text{F}$ .) average the duplicate runs as the ERBP; otherwise, repeat the entire test, averaging the four corrected observed values to determine the original ERBP.

**S6.2 Wet ERBP.** Determine the wet ERBP of a brake fluid by running duplicate samples according to the following procedure.

**S6.2.1 Summary of the procedure.** A 100-ml sample of the brake fluid is humidified under controlled conditions; 100 ml of SAE RM-1 Compatibility Fluid is used to establish the end point for humidification. After humidification the water content and ERBP of the brake fluid are determined.

**S6.2.2 Apparatus for humidification.** (See Figure 3) Test apparatus shall consist of—

(a) *Glass jars.* Four SAE RM-49 corrosion test jars or equivalent screw-top, straight-sided, round glass jars each having a capacity of about 475 ml and approximate inner dimensions of 100 mm in height by 75 mm in diameter, with matching lids having new, clean inserts providing water-vapor-proof seals;

(b) *Desiccator and cover.* Four bowl-form glass desiccators, 250 mm inside diameter, having matching tubulated covers fitted with No. 8 rubber stoppers; and

(c) *Desiccator plate.* Four 230 mm diameter, perforated porcelain desiccator plates, without feet, glazed on one side.

### S6.2.3 Reagents and materials.

(a) Ammonium sulfate,  $(\text{NH}_4)_2\text{SO}_4$ . Reagent or A.C.S. grade.

(b) Distilled water, see S7.1.

(c) SAE RM-1 compatibility fluid.

**S6.2.4 Preparation of apparatus.** Lubricate the ground-glass joint of the desiccator. Load each desiccator with  $450 \pm 25$  grams of the ammonium sulfate and add  $125 \pm 10$  ml of distilled water. The surface of the salt slurry shall lie

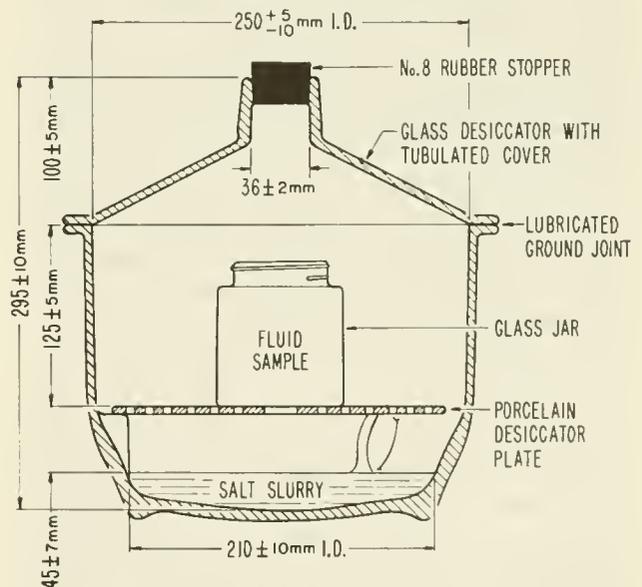


FIG. 3  
HUMIDIFICATION APPARATUS

within  $45 \pm 7$  mm of the top surface of the desiccator plate. Place the desiccators in an area with temperature controlled at  $23 \pm 2^\circ$  C. ( $73.4 \pm 3.6^\circ$  F.) throughout the humidification procedure. Load the desiccators with the slurry and allow to condition with the covers on and stoppers in place at least 12 hours before use. Use a fresh charge of salt slurry for each test.

**S6.2.5 Procedure.** Pour  $100 \pm 1$  ml of the brake fluid into a corrosion test jar. Promptly place the jar into a desiccator. Prepare duplicate test sample, and two duplicate specimens of the SAE RM-1 compatibility fluid. Adjust water content of the SAE RM-1 fluid to  $0.50 \pm 0.05$  percent by weight at the start of the test in accordance with S7.2. At intervals remove the rubber stopper in the top of each desiccator containing SAE RM-1 fluid. Using a long needled hypodermic syringe, take a sample of not more than 2 ml from each jar and determine its water content. Remove no more than 10 ml of fluid from each SAE RM-1 sample during the humidification procedure. When the water content of the SAE fluid reaches  $3.50 \pm 0.05$  percent by weight (average of the duplicates), remove the two test fluid specimens from their desiccators and promptly cap each jar tightly. Measure the water contents of the test fluid specimens in accordance with S7.2 and determine their ERBP's in accordance with S6.1 through S6.1.5. If the 2 ERBP's agree within  $4^\circ$  C. ( $8^\circ$  F.), average them to determine the wet ERBP; otherwise repeat and average the four individual ERBP's as the wet ERBP of the brake fluid.

**S6.3 Kinematic viscosity.** Determine the kinematic viscosity of a brake fluid in centistokes (cSt) by the following procedure. Run duplicate samples at each of the specified temperatures, making two timed runs on each sample.

**S6.3.1 Summary of the procedure.** The time is measured for a fixed volume of the brake fluid to flow through a calibrated glass capillary viscometer under an accurately reproducible head and at a closely controlled temperature. The kinematic viscosity is then calculated from the measured flow time and the calibration constant of the viscometer.

### S6.3.2 Apparatus.

(a) *Viscometers.* Calibrated glass capillary-type viscometers, ASTM D2515-66, "Standard Specification for Kinematic Glass Viscometers," measuring viscosity within the precision limits of S6.4.7. Use suspended level viscometers for viscosity measurements at low temperatures. Use Cannon-Fenske Routine or other modified Ostwald viscometers at ambient temperatures and above.

(b) *Viscometer holders and frames.* Mount a viscometer in the constant-temperature bath so that the mounting tube is held within 1 degree of the vertical.

(c) *Viscometer bath.* A transparent liquid bath of sufficient depth such that at no time during the measurement will any portion of the sample in the viscometer be less than 2 cm below the surface or less than 2 cm above the bottom. The bath shall be cylindrical in shape, with turbulent agitation sufficient to meet the temperature control requirements. For measurements within 15 to  $100^\circ$  C. ( $60$  to  $212^\circ$  F.) the temperature of the bath medium shall not vary by more than  $0.01^\circ$  C. ( $0.02^\circ$  F.) over the length of the viscometers, or between the positions of the viscometers, or at the locations of the thermometers. Outside this range, the variation shall not exceed  $0.03^\circ$  C. ( $0.05^\circ$  F.).

(d) *Thermometers.* Liquid-in-glass Kinematic Viscosity Test Thermometers, covering the range of test temperatures indicated in Table IV and conforming to ASTM E1-68, "Specifications for ASTM Thermometers," and in the IP requirements for IP Standard Thermometers. Standardize before use (see S6.3.3(b)). Use two standardized thermometers in the bath.

(e) *Timing device.* Stop watch or other timing device graduated in divisions representing not more than 0.2 second, with an accuracy of at least  $\pm 0.05$  percent when tested over intervals of 15 minutes. Electrical timing devices may be used when the current frequency is controlled to an accuracy of 0.01 percent or better.

### S6.3.3 Standardization.

(a) *Viscometers.* Use viscometers calibrated in accordance with Appendix 1 of ASTM D445-65, "Viscosity of Transparent and Opaque

TABLE IV  
KINEMATIC VISCOSITY THERMOMETERS

Temperature range		For tests at		Subdivisions		Thermometer number	
deg C.	deg F.	deg C.	deg F.	deg C.	deg F.	ASTM	IP
minus 55.3 to minus 52.5	minus 67.5 to minus 62.5	minus 55	minus 67	0.05	0.1	74 F	69 F. or C.
minus 41.4 to minus 38.6	minus 42.5 to minus 37.5	minus 40	minus 40	0.05	0.1	73 F	68 F. or C.
98.6 to 101.4	207.5 to 212.5	100	212	0.05	0.1	30 F	32 F. or C.

Liquids (Kinematic and Dynamic Viscosities.)” The calibration constant,  $C$ , is dependent upon the gravitational acceleration at the place of calibration. Thus must, therefore, be supplied by the standardization laboratory together with the instrument constant. Where the acceleration of gravity,  $g$ , in the two locations differs by more than 0.1 percent, correct the calibration constant as follows:

$$C_2 = \frac{g_2}{g_1} \times C_1$$

where the subscripts 1 and 2 indicate respectively the standardization laboratory and the testing laboratory.

(b) *Thermometers.* Check liquid-in-glass thermometers to the nearest  $0.01^\circ$  C. ( $0.02^\circ$  F.) by direct comparison with a standardized thermometer. Kinematic Viscosity Test Thermometers shall be standardized at “total immersion.” The ice point of standardized thermometers shall be determined before use and the official corrections shall be adjusted to conform to the changes in ice points. (See ASTM E77-66, “Verification and Calibration of Liquid-in-Glass Thermometers.”)

(c) *Timers.* Time signals are broadcast by the National Bureau of Standards, Station WWV, Washington, D.C. at 2.5, 5, 10, 15, 20, 25, 30 and 35 Mc/sec (MHz). Time signals are also broadcast by Station CHU from Ottawa, Canada, at 3.330, 7.335 and 14.670 Mc/sec, and Station MSF at Rugby, United Kingdom, at 2.5, 5 and 10 Mc/sec.

#### S6.3.4 Procedure.

(a) Set and maintain the bath at the appropriate test temperature (See S5.1.3) within the

limits specified in S6.3.2(c). Apply the necessary corrections, if any, to all thermometer readings.

(b) Select a clean, dry, calibrated viscometer giving a flow time not less than its specified minimum, or 200 seconds, whichever is the greater.

(c) Charge the viscometer in the manner used when the instrument was calibrated. Do not filter or dry the brake fluid, but protect it from contamination by dirt and moisture during filling and measurements.

(1) Charge the suspended level viscometers by tilting about 30 degrees from the vertical and pouring sufficient brake fluid through the fill tube into the lower reservoir so that when the viscometer is returned to vertical position the meniscus is between the fill marks. For measurements below  $0^\circ$ C ( $32^\circ$ F), before placing the filled viscometer into the constant temperature bath, draw the sample into the working capillary and timing bub and insert small rubber stoppers to suspend the fluid in this position, to prevent accumulation of water condensate on the walls of the critical portions of the viscometer. Alternatively, fit loosely packed drying tubes onto the open ends of the viscometer to prevent water condensation, but do not restrict the flow of the sample under test by the pressures created in the instrument.

(2) If a Cannon-Fenske Routine viscometer is used, charge by inverting and immersing the smaller arm into the brake fluid and applying vacuum to the larger arm. Fill the tube to the upper timing mark, and return the viscometer to an upright position.

(d) Mount the viscometer in the bath in a true vertical position (See S6.3.2(b)).

(e) The viscometer shall remain in the bath until it reaches the test temperature.

(f) At temperature below 0°C (32°F) conduct an untimed preliminary run by allowing the brake fluid to drain through the capillary into the lower reservoir after the test temperature has been established.

(g) Adjust the head level of the brake fluid to a position in the capillary arm about 5 mm above the first timing mark.

(h) With brake fluid flowing freely measure to within 0.2 second the time required for the meniscus to pass from the first timing mark to the second. If this flow time is less than the minimum specified for the viscometer, or 200 seconds, whichever is greater, repeat using a viscometer with a capillary of smaller diameter.

(i) Repeat S6.3.4(g) and (h). If the two timed runs do not agree within 0.2 percent, reject and repeat using a fresh sample of brake fluid.

#### S6.3.5 Cleaning of viscometers.

(a) Periodically clean the instrument with chromic acid to remove organic deposits. Rinse thoroughly with distilled water and acetone, and dry with clean dry air.

(b) [Between successive samples rinse the viscometer with ethanol (isopropanol when testing DOT 5 fluids) followed by an acetone or ether rinse. Pass a slow stream of filtered dry air through the viscometer until the last trace of solvent is removed. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

#### S6.3.6 Calculation.

(a) The following viscometers have a fixed volume charged at ambient temperature, and as a consequence  $C$  varies with test temperature: Cannon-Fenske Routine, Pinkevitch, Cannon-Manning Semi-Micro, and Cannon Fenske Opaque. To calculate  $C$  at test temperatures other than the calibration temperature for these viscometers, see ASTM D2515-66, "Kinematic Glass Viscometers" or follow instructions given on the manufacturer's certificate of calibration.

(b) Average the four timed runs on the duplicate samples to determine the kinematic viscosities.

#### S6.3.7 Precision (at 95 percent confidence level).

(a) *Repeatability.* If results on duplicate samples by the same operator differ by more than 1.0 percent of their mean, repeat the tests.

**S6.4 pH value.** Determine the pH value of a brake fluid by running one sample according to the following procedure.

**S6.4.1 Summary of the procedure.** Brake fluid is diluted with an equal volume of an ethanol-water solution. The pH of the resultant mixture is measured with a prescribed pH meter assembly at 23°C (73.4°F).

**S6.4.2 Apparatus.** The pH assembly consists of the pH meter, glass electrode, and calomel electrode, as specified in Appendices A1.1, A1.2 and A1.3 of ASTM D1121-67, "Standard Method of Test for Reserve Alkalinity of Engine Antifreezes and Antitrusts." The glass electrode is a full range type (pH 0-14), with low sodium error.

**S6.4.3 Reagents.** Reagent grade chemicals conforming to the specifications of the Committee on Analytical Reagents of the American Chemical Society.

(a) *Distilled water.* Distilled water (S7.1) shall be boiled for about 15 minutes to remove carbon dioxide, and protected with a soda-lime tube or its equivalent while cooling and in storage. (Take precautions to prevent contamination by the materials used for protection against carbon dioxide). The pH of the boiled distilled water shall be between 6.2 and 7.2 at 25°C (77°C).

(b) *Standard buffer solutions.* Prepare buffer solutions for calibrating the pH meter and electrode pair from salts sold specifically for use, either singly or in combination, as pH standards. Dry salts for 1 hour at 110°C (230°F) before use except for borax which shall be used as the decahydrate. Store solutions with pH less than 9.5 in bottles of chemically resistant glass or polyethylene. Store the alkaline phosphate solu-

tion in a glass bottle coated inside with paraffin. Do not use a standard with an age exceeding three months.

(1) Potassium hydrogen phthalate buffer solution (0.05 M, pH=4.01 at 25°C (77°F)). Dissolve 10.21 g of potassium hydrogen phthalate ( $\text{KHC}_8\text{H}_4\text{O}_4$ ) in distilled water. Dilute to 1 liter.

(2) Neutral phosphate buffer solution (0.025 M with respect to each phosphate salt, pH=6.86 at 25°C (77°F)). Dissolve 3.40 g of potassium dihydrogen phosphate ( $\text{KH}_2\text{PO}_4$ ) and 3.55 g of anhydrous disodium hydrogen phosphate ( $\text{Na}_2\text{HPO}_4$ ) in distilled water.

(3) Borax buffer solution (0.01 M, pH=9.18 at 25°C (77°F)). Dissolve 3.81 g of disodium tetraborate decahydrate ( $\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ ) in distilled water, and dilute to 1 liter. Stopper the bottle except when actually in use.

(4) Alkaline phosphate buffer solution (0.01 M trisodium phosphate, pH=11.72 at 25°C (77°F)). Dissolve 1.42 g of anhydrous disodium hydrogen phosphate ( $\text{Na}_2\text{HPO}_4$ ) in 100 ml of a 0.1 M carbonate-free solution of sodium hydroxide. Dilute to 1 liter with distilled water.

(5) Potassium chloride electrolyte. Prepare a saturated solution of potassium chloride (KCl) in distilled water.

(c) *Ethanol-water mixture.* To 80 parts by volume of ethanol (S7.3) add 20 parts by volume of distilled water. Adjust the pH of the mixture to  $7.0 \pm 0.1$  using 0.1 N sodium hydroxide (NaOH) solution. If more than 4.0 ml of NaOH solution per liter of mixture is required for neutralization, discard the mixture.

#### S6.4.4 Preparation of electrode system.

(a) *Maintenance of electrodes.* Clean the glass electrode before using by immersing in cold chromic-acid cleaning solution. Drain the calomel electrode and fill with KCl electrolyte, keeping level above that of the mixture at all times. When not in use, immerse the lower halves of the electrodes in distilled water, and do not immerse in the mixture for any appreciable period of time between determinations.

(b) *Preparation of electrodes.* Condition new glass electrodes and those that have been stored

dry as recommended by the manufacturer. Before and after using, wipe the glass electrode thoroughly with a clean cloth, or a soft absorbent tissue, and rinse with distilled water. Before each pH determination, soak the prepared electrode in distilled water for at least 2 minutes. Immediately before use, remove any excess water from the tips of the electrode.

#### S6.4.5 Standardization of the pH assembly and testing of the electrodes.

(a) Immediately before use, standardize the pH assembly with a standard buffer solution. Then use a second standard buffer solution to check the linearity of the response of the electrodes at different pH values, and to detect a faulty glass electrode or incorrect temperature compensation. The two buffer solutions bracket the anticipated pH value of the test brake fluid.

(b) Allow instrument to warm up, and adjust according to the manufacturer's instructions. Immerse the tips of the electrodes in a standard buffer solution and allow the temperature of the buffer solution and the electrodes to equalize. Set the temperature knob at the temperature of the buffer solution. Adjust the standardization or asymmetry potential control until the meter registers a scale reading, in pH units, equal to the known pH of the standardizing buffer solution.

(c) Rinse the electrodes with distilled water and remove excess water from the tips. Immerse the electrodes in a second standard buffer solution. The reading of the meter shall agree with the known pH of the second standard buffer solution within  $\pm 0.05$  unit without changing the setting of the standardization of asymmetry potential control.

(d) A faulty electrode is indicated by failure to obtain a correct value for the pH of the second standard buffer solution after the meter has been standardized with the first.

**S6.4.6 Procedure.** To  $50 \pm 1$  ml of the test brake fluid add  $50 \pm 1$  ml of the ethanol-water (S6.4.3(c)) and mix thoroughly. Immerse the electrodes in the mixture. Allow the system to come to equilibrium, readjust the temperature compensation if necessary, and take the pH reading.

**S6.5 Fluid stability.** Evaluate the heat and chemical stability of a brake fluid by the following procedure, running duplicate samples for each test and averaging the results.

**S6.5.1 Summary of the procedure.** The degradation of the brake fluid at elevated temperature, alone or in a mixture with a reference fluid, is evaluated by determining the change in boiling point after a period of heating under reflux conditions.

**S6.5.2 Apparatus.** Use the apparatus and preparation specified in S6.1.2 and S6.1.3.

**S6.5.3 High temperature stability.**

**S6.5.3.1 Procedure.**

(a) [Heat a new  $60 \pm 1$  ml sample of the brake fluid to  $185 \pm 2^\circ\text{C}$  ( $365 \pm 3.6^\circ\text{F}$ ). Hold at this temperature for  $120 \pm 5$  minutes. Bring to a reflux rate in excess of 1 drop per second within 5 minutes. The reflux rate should not exceed 5 drops per second at any time. Over the next  $5 \pm 2$  minutes adjust the heating rate to obtain an equilibrium reflux rate of 1 to 2 drops per second. Maintain this rate for an additional 2 minutes, taking 4 temperature readings at 30-second intervals. Average these as the observed ERBP. If no reflux is evident when the fluid temperature reaches  $260^\circ\text{C}$  ( $500^\circ\text{F}$ ), discontinue heating and report ERBP as in excess of  $260^\circ\text{C}$  ( $500^\circ\text{F}$ ). (39 F.R. 30353—August 22, 1974 Effective: 10/1/74)]

**S6.5.3.2 Calculation.** Correct the observed ERBP for thermometer and barometric pressure factors according to S6.1.5(a) and (b). Average the corrected ERBP's of the duplicate samples. The difference between this average and the original ERBP obtained in S6.1 is the change in ERBP of the fluid.

**S6.5.4 Chemical stability.**

**S6.5.4.1 Materials.** SAE RM-1 Compatibility Fluid, as described in Appendix A of SAE Standard J1703b, "Motor Vehicle Brake Fluid," April 1968.

**S6.5.4.2 Procedure.**

(a) Mix  $30 \pm 1$  ml of the brake fluid with  $30 \pm 1$  ml of SAE RM-1 Compatibility Fluid in

a boiling point flask (S6.1.2(a)). Determine the initial ERBP of the mixture by applying heat to the flask so that the fluid is refluxing in  $10 \pm 2$  minutes at a rate in excess of 1 drop per second, but not more than 5 drops per second. Note the maximum fluid temperature observed during the first minute after the fluid begins refluxing at a rate in excess of 1 drop per second. Over the next  $15 \pm 1$  minutes, adjust and maintain the reflux rate at 1 to 2 drops per second. Maintain this rate for an additional 2 minutes, recording the average value of four temperature readings taken at 30-second intervals as the final ERBP.

(b) Thermometer and barometric corrections are not required.

**S6.5.4.3 Calculation.** The difference between the initial ERBP and the final average temperature is the change in temperature of the refluxing mixture. Average the results of the duplicates to the nearest  $0.5^\circ\text{C}$  ( $1^\circ\text{F}$ ).

**S6.6 Corrosion.** Evaluate the corrosiveness of a brake fluid by running duplicate samples according to the following procedure.

**S6.6.1 Summary of the procedure.** Six specified metal corrosion test strips are polished, cleaned, and weighed, then assembled as described. Assembly is placed on a standard wheel cylinder cup in a corrosion test jar, immersed in the water-wet brake fluid, capped and placed in an oven at  $100^\circ\text{C}$  ( $212^\circ\text{F}$ ) for 120 hours. Upon removal and cooling, the strips, fluid, and cups are examined and tested.

**S6.6.2 Equipment.**

(a) *Balance.* An analytical balance having a minimum capacity of 50 grams and capable of weighing to the nearest 0.1 mg.

(b) *Desiccators.* Desiccators containing silica gel or other suitable desiccant.

(c) *Oven.* Gravity convection oven capable of maintaining the desired set point within  $2^\circ\text{C}$  ( $3.6^\circ\text{F}$ ).

(d) *Micrometer.* A machinist's micrometer 25 to 50 mm (1 to 2 inches) capacity, or an optical comparator, capable of measuring the diameter

of the SBR wheel cylinder (WC) cups to the nearest 0.02 mm (0.001 inch).

### S6.6.3 Materials.

(a) *Corrosion test strips.* Two sets of strips from each of the metals listed in Appendix C of SAE Standard J1703b. Each strip shall be approximately 8 cm long, 1.3 cm wide, not more than 0.6 cm thick, and have a surface area of  $25 \pm 5$  sq cm and a hole 4 to 5 mm (0.16 to 0.20 inch) in diameter on the centerline about 6 mm from one end. The hole shall be clean and free from burrs. Tinned iron strips shall be unused. Other strips, if used, shall not be employed if they cannot be polished to a high finish.

(b) *SBR cups.* Two unused standard SAE SBR wheel cylinder (WC) cups, as specified in S7.6.

(c) *Corrosion test jars and lids.* Two screw-top straight-sided round glass jars, each having a capacity of approximately 475 ml and inner dimensions of approximately 100 mm in height and 75 mm in diameter, and a tinned steel lid (no insert or organic coating) vented with a hole  $0.8 \pm 0.1$  mm ( $0.031 \pm 0.004$  inch) in diameter (No. 68 drill).

(d) *Machine screws and nuts.* Clean, rust and oil-free, uncoated mild steel round or fillister head machine screws, size 6 or 8-32 UNC-Class 2A, 5/8 or 3/4 inch long, (or equivalent metric sizes), and matching uncoated nuts.

(e) *Supplies for polishing strips.* Waterproof silicon carbide paper, grit No. 320 A; grade 00 steel wool, lint-free polishing cloth.

(f) *Distilled water* as specified in S7.1.

(g) *Ethanol* as specified in S7.3.

[(h) *Isopropanol* as specified in S7.7. (39 F.R. 30353—August 22, 1974. Effective 10/1/74)]

### S6.6.4 Preparation.

(a) *Corrosion test strips.* [Except for the tinned iron strips, abrade corrosion test strips on all surface areas with silicon carbide paper wet with ethanol (isopropanol when testing DOT 5 fluids) until all surface scratches, cuts and pits are removed. Use a new piece of paper for each different type of metal. Polish the strips with the 00 grade steel wool. Wash all strips, including the tinned iron and the assembly hardware, with ethanol; dry the strips

and assembly hardware with a clean lint-free cloth or use filtered compressed air and place the strips and hardware in a desiccator containing silica gel or other suitable desiccant and maintained at  $23 \pm 5^\circ\text{C}$  ( $73.4 \pm 9^\circ\text{F}$ ), for at least one hour. Handle the strips with forceps after polishing. Weigh and record the weight of each strip to the nearest 0.1 mg. Assemble the strips on a clean dry machine screw, with matching plain nut, in the order of tinned iron, steel, aluminum, cast iron, brass, and copper. Bend the strips, other than the cast iron, so that there is a separation of  $3 \pm \frac{1}{2}$  mm ( $\frac{1}{8} \pm \frac{1}{64}$  inch) between adjacent strips for a distance of about 5 cm (2 inches) from the free end of the strips. (See Figure 4.) Tighten the screw on each test strip assembly so that the strips are in electrolytic contact, and can be lifted by either of the outer strips (tinned iron or copper) without any of the strips moving relative to the others when held horizontally. Immerse the strip assemblies in 90 percent ethyl alcohol. Dry with dried filtered compressed air, then desiccate at least one hour before use. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(b) *SBR WC cups.* Measure the base diameters of the 2 standard SBR cups, using an optical comparator or micrometer, to the nearest 0.02 mm (0.001 inch) along the centerline of the

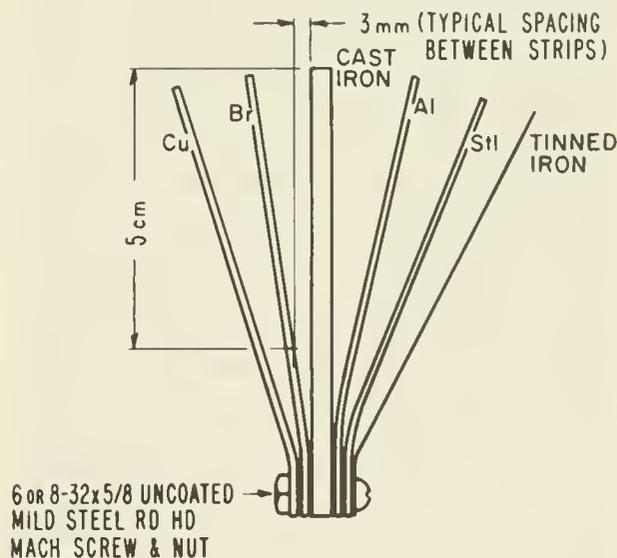


FIG. 4  
CORROSION STRIP ASSEMBLY

SAE and rubber-type identifications and at right angles to this centerline. Take the measurements at least 0.4 mm (0.015 inch) above the bottom edge and parallel to the base of the cup. Discard any cup if the two measured diameters differ by more than 0.08 mm (0.003 inch). Average the two readings on each cup. Determine the hardness of the cups according to S7.4.

**S6.6.5 Procedure.** [Rinse the cups in ethanol (isopropanol when testing DOT 5 fluids) for not more than 30 seconds and wipe dry with a clean lint-free cloth. Place one cup with lip edge facing up, in each jar. Insert a metal strip assembly inside each cup with the fastened end down and the free end extending upward. (See Figure 5.) When testing DOT 3 and DOT 4 brake fluids, mix 760 ml. of brake fluid with 40 ml. of distilled water, or, when testing DOT 5 brake fluids, humidify 800 ml. of brake fluid in accordance with S6.2, eliminating determination of the ERBP; using this water-wet mixture, cover each strip assembly to a minimum depth of 10 mm. above the tops of the strips. Tighten the lids and place the jars for  $120 \pm 2$  hours in an oven maintained at  $100 \pm 2^\circ$  C. ( $212 \pm 3.6^\circ$  F.). Allow the jars to cool at  $23 \pm 5^\circ$  C. ( $73.4 \pm 9^\circ$  F.) for 60 to 90 minutes. Immediately remove the strips from the jars using forceps, agitating the strip assembly in the fluid to remove adhering sediment. Examine the test strips and jars for adhering crystalline deposits. Disassemble the metal strips, and remove adhering fluid by flushing with water; clean each strip by wiping with a clean cloth wetted with ethanol. Examine the strips for evidence of corrosion and pitting. Disregard staining or discoloration. Place the strips in a desiccator containing silica gel or other suitable desiccant, maintained at  $23 \pm 5^\circ$  C. ( $73.4 \pm 9^\circ$  F.), for at least 1 hour. Weigh each strip to the nearest 0.1 mg. Determine the change in weight of each metal strip. Average the results for the two strips of each type of metal. Immediately following the cooling period, remove the cups from the jars with forceps. Remove loose adhering sediment by agitation of the cups in the mixture. Rinse the cups in ethanol and air-dry. Examine the cups for evidence of sloughing, blisters, and other forms of

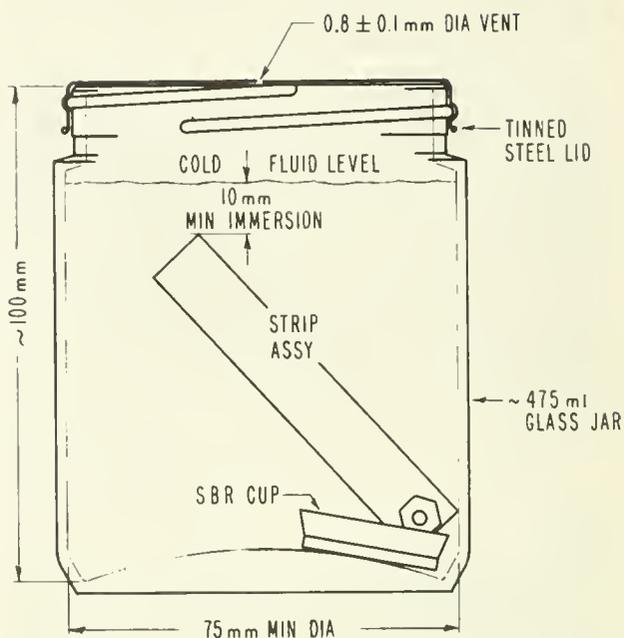


FIG. 5  
CORROSION TEST  
APPARATUS

disintegration. Measure the base diameter and hardness of each cup within 15 minutes after removal from the mixture. Examine the mixture for gelling. Agitate the mixture to suspend and uniformly disperse sediment. From each jar, transfer a 100 ml portion of the mixture to an ASTM cone-shaped centrifuge tube. Determine the percent sediment after centrifuging as described in S7.5. Measure the pH value of the DOT 3 and DOT 4 test mixture according to S6.4.6 (39 F.R.30353—August 22, 1974. Effective: 10/1/74)]

#### S6.6.6 Calculation.

(a) Measure the area of each type of test strip to the nearest square centimeter. Divide the average change in weight for each type by the area of that type.

(b) Note other data and evaluations indicating compliance with S5.1.6. In the event of a marginal pass on inspection by attributes, or of a failure in one of the duplicates, run another set of duplicate samples. Both repeat samples shall meet all requirements of S5.1.6.

**S6.7 Fluidity and appearance at low temperatures.** Determine the fluidity and appearance of a sample of brake fluid at each of two selected temperatures by the following procedure.

**S6.7.1 Summary of procedure.** Brake fluid is chilled to expected minimum exposure temperatures and observed for clarity, gellation, sediment, separation of components, excessive viscosity or thixotropy.

**S6.7.2 Apparatus.**

(a) *Oil sample bottle.* Two clear flint glass 4-ounce bottles made especially for sampling oil and other liquids, with a capacity of approximately 125 ml, an outside diameter of  $37.0 \pm 0.05$  mm and an overall height of  $165 \pm 2.5$  mm.

(b) *Cold chamber.* An air bath cold chamber capable of maintaining storage temperatures down to minus  $55^\circ\text{C}$  (minus  $67^\circ\text{F}$ ) with an accuracy of  $\pm 2^\circ\text{C}$  ( $3.6^\circ\text{F}$ ).

(c) *Timing device.* A timing device in accordance with S6.3.2(e).

**S6.7.3 Procedure.**

[(a) Place  $100 \pm 1$  ml. of brake fluid at room temperature in an oil sample bottle. Stopper the bottle with an unused cork and place in the cold chamber at the higher storage temperature specified in Table II (S5.1.7(c)). After  $144 \pm 4$  hours remove the bottle from the chamber, quickly wipe it with a clean, lint-free cloth, saturated with ethanol (isopropanol when testing DOT 5 fluids) or acetone. Examine the fluid for evidence of sludging, sedimentation, crystallization, or stratification. Invert the bottle and determine the number of seconds required for the air bubble to travel to the top of the fluid. Let sample warm to room temperature and examine. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(b) Repeat S6.7.3(a), substituting the lower cold chamber temperature specified in Table II, and a storage period of 6 hours  $\pm$  12 minutes. NOTE: Test specimens from either storage temperature may be used for the other only after warming up to room temperature.

**S6.8 Evaporation.** The evaporation residue, and pour point of the evaporation residue of brake fluid, are determined by the following procedure. Four replicate samples are run.

**S6.8.1 Summary of the procedure.** The volatile diluent portion of a brake fluid is evaporated in an oven at  $100^\circ\text{C}$  ( $212^\circ\text{F}$ ). The non-volatile lubricant portion (evaporation residue) is measured and examined for grittiness; the residues are then combined and checked to assure fluidity at minus  $5^\circ\text{C}$  ( $23^\circ\text{F}$ ).

**S6.8.2 Apparatus.**

(a) *Petri dishes.* Four covered glass petri dishes approximately 100 mm in diameter and 15 mm in height.

(b) *Oven.* A top-vented gravity-convection oven capable of maintaining a temperature of  $100 \pm 2^\circ\text{C}$  ( $212 \pm 3.6^\circ\text{F}$ ).

(c) *Balance.* A balance having a capacity of at least 100 grams, capable of weighing to the nearest 0.01 gram, and suitable for weighing the petri dishes.

(d) *Oil sample bottle.* A glass sample bottle as described in S6.7.2(a).

(e) *Cold chamber.* Air bath cold chamber capable of maintaining an oil sample bottle at minus  $5 \pm 1^\circ\text{C}$  ( $23 \pm 2^\circ\text{F}$ ).

(f) *Timing device.* A timing device as described in S6.3.2(e).

**S6.8.3 Procedure.** Obtain the tare weight of each of the four covered petri dishes to the nearest 0.01 gram. Place  $25 \pm 1$  ml of brake fluid in each dish, replace proper covers and reweigh. Determine the weight of each brake fluid test specimen by the difference. Place the four dishes, each inside its inverted cover, in the oven at  $100 \pm 2^\circ\text{C}$  ( $212 \pm 3.6^\circ\text{F}$ ) for  $46 \pm 2$  hours. (Note: Do not simultaneously heat more than one fluid in the same oven.) Remove the dishes from the oven, allow to cool to  $23 \pm 5^\circ\text{C}$  ( $73.4 \pm 9^\circ\text{F}$ ), and weigh. Return to the oven for an additional  $24 \pm 2$  hours. If at the end of  $72 \pm 4$  hours the average loss by evaporation is less than 60 percent, discontinue the evaporation procedure and proceed with examination of the residue. Otherwise, continue this procedure either until equilibrium is reached as evidenced by an incremental weight loss of less than 0.25 gram in 24 hours on all individual dishes or for a maximum of 7 days. During the heating and weighing operation, if it is necessary to remove the dishes from the oven for a period of longer than 1 hour, the dishes shall be stored in a desiccator

as soon as cooled to room temperature. Calculate the percentage of fluid evaporated from each dish. Examine the residue in the dishes at the end of 1 hour at  $23\pm 5^{\circ}\text{C}$  ( $73.4\pm 9^{\circ}\text{F}$ ). Rub any sediment with the fingertip to determine grittiness or abrasiveness. Combine the residues from all four dishes in a 4-ounce oil sample bottle and store vertically in a cold chamber at minus  $5\pm 1^{\circ}\text{C}$  ( $23\pm 2^{\circ}\text{F}$ ) for  $60\pm 10$  minutes. Quickly remove the bottle and place in the horizontal position. The residue must flow at least 5 mm (0.2 inch) along the tube within 5 seconds.

**S6.8.4 Calculation.** The average of the percentage evaporated from all four dishes is the loss by evaporation.

**S6.9 Water tolerance.** Evaluate the water tolerance characteristics of a brake fluid by running one test specimen according to the following procedure.

**S6.9.1 Summary of the procedure.** [DOT 3 and DOT 4 brake fluid is diluted with 3.5 per cent water, and DOT 5 brake fluid is humidified, then stored at minus  $40^{\circ}\text{C}$ . (minus  $40^{\circ}\text{F}$ .) for 120 hours. The cold, water-wet fluid is first examined for clarity, stratification, and sedimentation, then placed in an oven at  $60^{\circ}\text{C}$ . ( $140^{\circ}\text{F}$ .) for 24 hours. On removal, it is again examined for stratification and the volume percent of sediment determined by centrifuging. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

**S6.9.2 Apparatus.**

- (a) *Centrifuge tube.* See S7.5.1(a).
- (b) *Centrifuge.* See S7.5.1(b).
- (c) *Cold chamber.* See S6.7.2(b).
- (d) *Oven.* Gravity or forced convection oven.
- (e) *Timing device.* See S6.3.2(e).

**S6.9.3 Procedure.**

(a) *At low temperature.* [Humidify  $100\pm 1$  ml. of DOT 5 brake fluid in accordance with S6.2 eliminating determination of the ERBP. When testing DOT 3 and DOT 4 brake fluids, mix  $3.5\pm 0.1$  ml. of distilled water with  $100\pm 1$  ml. of the brake fluid; pour into a centrifuge tube. Stopper the tube with a clean cork and place in the cold chamber maintained at minus  $40\pm 2^{\circ}\text{C}$ . (minus  $40\pm 3.6^{\circ}\text{F}$ .) After 120 hours  $\pm 2$  hours remove the tube, quickly wipe with

clean lint-free cloth saturated with ethanol or acetone and examine the fluid, for evidence of sludging, sedimentation, crystallization, or stratification. Invert the tube and determine the number of seconds required for the air bubble to travel to the top of the fluid. (The air bubble is considered to have reached the top of the fluid when the top of the bubble reaches the 2 ml. graduation of the centrifuge tube.) If the wet fluid has become cloudy, warm to  $23\pm 5^{\circ}\text{C}$ . ( $73.4\pm 9^{\circ}\text{F}$ .) and note appearance and fluidity. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(b) *At  $60^{\circ}\text{C}$  ( $140^{\circ}\text{F}$ ).* Place tube and brake fluid from S6.9.3(a) in an oven maintained at  $60\pm 2^{\circ}\text{C}$  ( $140\pm 3.6^{\circ}\text{F}$ ) for  $24\pm 2$  hours. Remove the tube and immediately examine the contents for evidence of stratification. Determine the percent sediment by centrifuging as described in S7.5.

**S6.10 Compatibility.** The compatibility of a brake fluid with other brake fluids shall be evaluated by running one test sample according to the following procedure.

**S6.10.1 Summary of the procedure.** Brake fluid is mixed with an equal volume of SAE RM-1 Compatibility Fluid, then tested in the same way as for water tolerance (S6.9.3) except that the bubble flow time is not measured. This test is an indication of the compatibility of the test fluid with other motor vehicle brake fluids at both high and low temperatures.

**S6.10.2 Apparatus and materials.**

- (a) *Centrifuge tube.* See S7.5.1(a).
- (b) *Centrifuge.* See S7.5.1(b).
- (c) *Cold chamber.* See S6.7.2(b).
- (d) *Oven.* See S6.9.2(d).
- (e) *SAE RM-1 Compatibility Fluid.* As described in Appendix A of SAE Standard J1703b.

**S6.10.3 Procedure.**

(a) *At low temperature.* [Mix  $50\pm 0.5$  ml of brake fluid with  $50\pm 0.5$  ml of SAE RM-1 Compatibility Fluid. Pour this mixture into a centrifuge tube and stopper with a clean dry cork. Place tube in the cold chamber maintained at minus  $40\pm 2^{\circ}\text{C}$  (minus  $40\pm 3.6^{\circ}\text{F}$ ). After  $24\pm 2$  hours, remove tube, quickly wipe with a clean

lint-free cloth saturated with ethanol (isopropanol when testing DOT 5 fluids) or acetone. Examine the test specimen for evidence of sludging, sedimentation, or crystallization. DOT 3 and DOT 4 test fluids shall also be examined for stratification. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)】

(b) **At 60°C (140°F).** Place tube and test fluid from S6.10.3(a) for  $24 \pm 2$  hours in an oven maintained at  $60 \pm 2^\circ$  C. ( $140 \pm 3.6^\circ$  F.). Remove tube and immediately examine the contents of DOT 3 and DOT 4 test mixtures for evidence of stratification. Determine percent sediment by centrifuging as described in S7.5. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)】

**S6.11 Resistance to oxidation.** The stability of a brake fluid under oxidative conditions shall be evaluated by running duplicate samples according to the following procedure.

**S6.11.1 Summary of the procedure.** 【DOT 3 and DOT 4 brake fluids are activated with a mixture of approximately 0.2 percent benzoyl peroxide and 5 percent water. DOT 5 brake fluid is humidified in accordance with S6.2 eliminating determination of the ERBP, and then approximately 0.2 percent benzoyl peroxide is added. A corrosion test strip assembly consisting of a cast iron and an aluminum strip separated by tinfoil squares at each end is then rested on a piece of SBR WC cup positioned so that the test strip is half immersed in the fluid, and oven-aged at  $70^\circ$  C. ( $158^\circ$  F.) for 168 hours. At the end of this period the metal strips are examined for pitting, etching, and weight loss. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)】

**S6.11.2 Equipment.**

- (a) *Balance.* See S6.6.2(a).
- (b) *Desiccators.* See S6.6.2(b).
- (c) *Oven.* See S6.6.2(c).
- (d) Three glass test tubes approximately 22 mm outside diameter by 175 mm in length.

**S6.11.3 Reagents and materials.**

(a) *Benzoyl peroxide, reagent grade, 96 percent.* (Benzoyl peroxide that is brownish, or dusty, or has less than 90 percent purity, must be discarded.) Reagent strength may be evaluated by ASTM E298-68, "Standard Methods for Assay of Organic Peroxides."

(b) *Corrosion test strips.* Two sets of cast iron and aluminum metal test strips as described in Appendix C of SAE Standard J1703b.

(c) *Tinfoil.* Four unused pieces of tinfoil approximately 12 mm ( $\frac{1}{2}$  inch) square and between 0.02 and 0.06 mm (0.0008 and 0.0024 inch) in thickness. The foil shall be at least 99.9 percent tin and contain not more than 0.025 percent lead.

(d) *SBR cups.* Two unused, approximately one-eighth sections of a standard SAE SBR WC cup (as described in S7.6).

(e) *Machine screw and nut.* Two clean oil-free, No. 6 or  $8-32 \times \frac{3}{8}$  or  $\frac{1}{2}$  inch long (or equivalent metric size), round or fillister head, uncoated mild steel machine screws, with matching plain nuts.

**S6.11.4 Preparation.**

(a) *Corrosion test strips.* Prepare two sets of aluminum and cast iron test strips according to S6.6.4(a) except for assembly. Weigh each strip to the nearest 0.1 mg and assemble a strip of each metal on a machine screw, separating the strips at each end with a piece of tinfoil. Tighten the nut enough to hold both pieces of foil firmly in place.

(b) *Test mixture.* 【Place  $30 \pm 1$  ml. of the brake fluid under test in a 22 by 175 mm. test tube. For DOT 3 and DOT 4 fluids, add  $0.060 \pm .002$  gram of benzoyl peroxide, and  $1.50 \pm 0.05$  ml. of distilled water. For DOT 5 fluids, use test fluid humidified in accordance with S6.2, and add only the benzoyl peroxide. Stopper the tube loosely with a clean dry cork, shake, and place in an oven for 2 hours at  $70 \pm 2^\circ$  C. ( $158 \pm 3.6^\circ$  F.). Shake every 15 minutes to effect solution of the peroxide, but do not wet work. Remove the tube from the oven and allow to cool at  $23 \pm 5^\circ$  C. ( $73.4 \pm 9^\circ$  F.). Begin testing according to paragraph S6.11.5 not later than 24 hours after removal of tube from oven. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)】

**S6.11.5 Procedure.** 【Place a one-eighth SBR cup section in the bottom of each tube. Add 10 ml of prepared test mixture to each test tube. Place a metal-strip assembly in each, the end of the strip without the screw resting on the rubber, and the solution covering about one-half the

length of the strips. Stopper the tubes with clean dry corks and store upright for  $70 \pm 2$  hours at  $23 \pm 5^\circ\text{C}$  ( $73.4 \pm 9^\circ\text{F}$ ). Loosen the corks and place the tubes for  $168 \pm 2$  hours in an oven maintained at  $70 \pm 2^\circ\text{C}$  ( $158 \pm 3.6^\circ\text{F}$ ). Afterwards remove and disassemble strips. Examine the strips and note any gum deposits. Wipe the strips with a clean cloth wet with ethanol (isopropanol when testing DOT 5 fluids) and note any pitting, etching or roughening of surface disregarding stain or discoloration. Place the strips in a desiccator over silica gel or other suitable desiccant, at  $23 \pm 5^\circ\text{C}$  ( $73.4 \pm 9^\circ\text{F}$ ) for at least 1 hour. Again weigh each strip to the nearest 0.1 mg. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74) ]

**S6.11.6 Calculation.** Determine corrosion loss by dividing the change in weight of each metal strip by the total surface area of each strip measured in square centimeters, to the nearest square centimeter. Average the results for the two strips of each type of metal, rounding to the nearest 0.05 mg per square centimeter. If only one of the duplicates fails for any reason, run a second set of duplicate samples. Both repeat samples shall meet all requirements of S5.1.11.

**S6.12 Effect on SBR cups.** The effects of a brake fluid in swelling, softening, and otherwise affecting standard SBR WC cups shall be evaluated by the following procedure.

**S6.12.1 Summary of the procedure.** [Four standard SAE SBR WC cups are measured and their hardnesses determined. The cups, two to a jar, are immersed in the test brake fluid. One jar is heated for 70 hours at  $70^\circ\text{C}$  ( $158^\circ\text{F}$ ), and the other for 70 hours at  $120^\circ\text{C}$  ( $248^\circ\text{F}$ ). Afterwards, the cups are washed, examined for disintegration, remeasured, and their hardnesses re-determined. (40 F.R. 21474—May 16, 1975. Effective: 5/16/75) ]

**S6.12.2 Equipment and supplies.**

(a) *Oven.* See S6.6.2(c).

(b) *Glass jars and lids.* Two screw-top, straight-sided round glass jars, each having a capacity of approximately 250 ml and inner dimensions of approximately 125 mm in height and 50 mm in diameter, and a tinned steel lid (no insert or organic coating).

(c) *SBR cups.* See S7.6.

**S6.12.3 Preparation.** Measure the base diameters of the SBR cups as described in S6.6.4(b), and the hardness of each as described in S7.4.

**S6.12.4 Procedure.** [Wash the cups in 90 percent ethanol (isopropanol when testing DOT 5 fluids) (see S7.3), for not longer than 30 seconds and quickly dry with a clean, lint-free cloth. Using forceps, place two cups into each of the two jars; add 75 ml of brake fluid to each jar and cap tightly. Place one jar in an oven held at  $70^\circ \pm 2^\circ\text{C}$  ( $158 \pm 3.6^\circ\text{F}$ ) for  $70^\circ \pm 2$  hours. Place the other jar in an oven held at  $120 \pm 2^\circ\text{C}$  ( $248 \pm 3.6^\circ\text{F}$ ) for  $70^\circ \pm 2$  hours. Allow each jar to cool for 60 to 90 minutes at  $23 \pm 5^\circ\text{C}$  ( $73.4 \pm 9^\circ\text{F}$ ). Remove cups, wash with ethanol for not longer than 30 seconds, and quickly dry. Examine the cups for disintegration as evidenced by stickiness, blisters, or sloughing. Measure the base diameter and hardness of each cup within 15 minutes after removal from the fluid. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74) ]

**S6.12.5 Calculation.**

[(a) Calculate the change in base diameter for each cup. If the two values, at each temperature, do not differ by more than 0.10 mm (0.004 inch) average them to the nearest 0.02 mm (0.001 inch). If the two values differ by more than 0.10 mm, repeat the test at the appropriate temperature and average the four values as the change in base diameter. (36 F.R. 21594—Nov. 11, 1971. Effective 3/1/72) ]

(b) Calculate the change in hardness for each cup. The average of the two values for each pair is the change in hardness.

(c) Note disintegration as evidenced by stickiness blisters or sloughing.

**S6.13 Stroking properties.** Evaluate the lubricating properties, component compatibility, resistance to leakage, and related qualities of a brake fluid by running one sample according to the following procedures.

**S6.13.1 Summary of the procedure.** Brake fluid is stroked under controlled conditions at an elevated temperature in a simulated motor vehicle hydraulic braking system consisting of four slave wheel cylinders and an actuating master

cylinder connected by steel tubing. Referee standard parts are used. All parts are carefully cleaned, examined, and certain measurements made immediately prior to assembly for test. During the test, temperature, rate of pressure rise, maximum pressure, and rate of stroking, are specified and controlled. The system is examined periodically during stroking to assure that excessive leakage of fluid is not occurring. Afterwards, the system is torn down. Metal parts and SBR cups are examined and remeasured. The brake fluid and any resultant sludge and debris are collected, examined and tested.

**56.13.2 Apparatus and Equipment.** Either the drum and shoe type of stroking apparatus (see Figure 1 of SAE Standard J1703b), or the stroking fixture type (see Figure 3 of SAE J1703b) arranged as shown in Figure 2 of J1703b. The following components are required.

(a) *Brake assemblies.* With the drum and shoe apparatus: four drum and shoe assembly units (SAE RM-29a) consisting of four forward brake shoes and four reverse brake shoes with linings and four front wheel brake drum assemblies with assembly component parts. With stroking fixture type apparatus: four fixture units including appropriate adapter mounting plates to hold brake wheel cylinder assemblies.

(b) *Braking pressure actuation mechanism.* An actuating mechanism for applying a force to the master cylinder pushrod without side thrust. The amount of force applied by the actuating mechanism shall be adjustable and capable of applying sufficient thrust to the master cylinder to create a pressure of at least 70 kg/sq cm (1,000 psi) in the simulated brake system. A hydraulic gage or pressure recorder, having a range of at least 0 to 70 kg/sq cm (0 to 1,000 psi), shall be installed between the master cylinder and the brake assemblies and shall be provided with a shut-off valve and with a bleeding valve for removing air from the connecting tubing. The actuating mechanism shall be designed to permit adjustable stroking rates of approximately 1,000 strokes per hour. Use a mechanical or electrical counter to record the total number of strokes.

(c) *Heated air bath cabinet.* An insulated cabinet or oven having sufficient capacity to house the four mounted brake assemblies or stroking fixture assemblies, master cylinder, and necessary connections. A thermostatically controlled heating system is required to maintain a temperature of  $70 \pm 5^\circ\text{C}$  ( $158 \pm 9^\circ\text{F}$ ) or  $120 \pm 5^\circ\text{C}$  ( $248 \pm 9^\circ\text{F}$ ). Heaters shall be shielded to prevent direct radiation to wheel or master cylinder.

(d) *Master cylinder (MC) assembly (SAE RM-15a).* One cast iron housing hydraulic brake system cylinder having a diameter of approximately 28 mm ( $1\frac{1}{8}$  inch) and fitted for a filler cap and standpipe (see S6.13.2(e)). The MC piston shall be made from SAE CA360 copper-base alloy (half hard). A new MC assembly is required for each test.

(e) *Filler cap and standpipe.* MC filler cap provided with a glass or uncoated steel standpipe. Standpipe must provide adequate volume for thermal expansion, yet permit measurement and adjustment of the fluid level in the system to  $\pm 3$  ml. Cap and standpipe may be cleaned and reused.

(f) *Wheel cylinder (WC) assemblies (SAE RM-14a).* Four unused cast iron housing straight bore hydraulic brake WC assemblies having diameters of approximately 28 mm ( $1\frac{1}{8}$  inch) for each test. Pistons shall be made from unanodized SAE AA2024 aluminum alloy.

(g) *Micrometer.* Same as S6.6.2(d).

### 56.13.3 Materials.

(a) *Standard SBR brake cups.* Eight standard SAE SBR wheel cylinder test cups, one primary MC test cup, and one secondary MC test cup, all as described in S7.6, for each test.

(b) *Steel tubing.* Double wall steel tubing meeting SAE specification J527. A complete replacement of tubing is essential when visual inspection indicates any corrosion or deposits on inner surface of tubing. Tubing from master cylinder to one wheel cylinder shall be replaced for each test (minimum length 3 feet). Uniformity in tubing size is required between master cylinder and wheel cylinder. The standard master cylinder has two outlets for tubing, both of which must be used.

**S6.13.4 Preparation of test apparatus.**

(a) *Wheel cylinder assemblies.* [Use unused wheel cylinder assemblies. Disassemble cylinders and discard cups. Clean all metal parts with ethanol (isopropanol when testing DOT 5 fluids). Inspect the working surfaces of all metal parts for scoring, galling, or pitting and cylinder bore roughness, and discard all defective parts. Remove any stains on cylinder walls with crocus cloth and ethanol. If stains cannot be removed, discard the cylinder. Measure the internal diameter of each cylinder at a location approximately 19 mm (0.75 inch) from each end of the cylinder bore, taking measurements in line with the hydraulic inlet opening and at right angles to this centerline. Discard the cylinder if any of these four readings exceeds the maximum or minimum limits of 28.66 to 28.60 mm (1.128 to 1.126 inch). Measure the outside diameter of each piston at two points approximately 90 degrees apart. Discard any piston if either reading exceeds the maximum or minimum limits of 28.55 to 28.52 mm (1.124 to 1.123 inch). Select parts to insure that the clearance between each piston and matching cylinder is within 0.08 to 0.13 mm (0.003 to 0.005 inch). Use unused SBR cups. To remove dirt and debris, rinse the cups in 90 percent ethyl alcohol for not more than 30 seconds and wipe dry with a clean lint-free cloth. Discard any cups showing defects such as cuts, molding flaws, or blisters. Measure the lip and base diameters of all cups with an optical comparator or micrometer to the nearest 0.02 mm (0.001 inch) along the centerline of the SAE and rubber-type identifications and at right angles to this centerline. Determine base diameter measurements at least 0.4 mm (0.015 inch) above the bottom edge and parallel to the base of the cup. Discard any cup if the two measured lip or base diameters differ by more than 0.08 mm (0.003 inch). Average the lip and base diameters of each cup. Determine the hardness of all cups according to S7.4. Dip the rubber and metal parts of wheel cylinders, except housing and rubber boots, in the fluid to be tested and install them in accordance with the manufacturer's instructions. Manually stroke the cylinders to insure that they operate easily. Install

cylinders in the simulated brake system. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

(b) *Master cylinder assembly.* Use an unused master cylinder and unused standard SBR primary and secondary MC cups which have been inspected, measured and cleaned in the manner specified in S6.13.4(a), omitting hardness of the secondary MC cup. However, prior to determining the lip and base diameters of the secondary cup, dip the cup in test brake fluid, assemble on the MC piston, and maintain the assembly in a vertical position at  $23 \pm 5^\circ\text{C}$  ( $73.4 \pm 9^\circ\text{F}$ ) for at least 12 hours. Inspect the relief and supply ports of the master cylinder; discard the cylinder if ports have burrs or wire edges. Measure the internal diameter of the cylinder at two locations (approximately midway between the relief and supply ports and approximately 19 mm (0.75 inch) beyond the relief port toward the bottom or discharge end of the bore), taking measurements at each location on the vertical and horizontal centerline of the bore. Discard the cylinder if any reading exceeds the maximum or minimum limits of 28.65 to 28.57 mm (1.128 to 1.125 inch). Measure the outside diameter of each end of the master cylinder piston at two points approximately 90 degrees apart. Discard the piston if any of these four readings exceed the maximum or minimum limits of 28.55 to 28.52 mm (1.124 to 1.123 inch). Dip the rubber and metal parts of the master cylinder, except the housing and push rod-boot assembly, in the brake fluid and install in accordance with manufacturer's instructions. Manually stroke the master cylinder to insure that it operates easily. Install the master cylinder in the simulated brake system.

(c) *Assembly and adjustment of test apparatus.* When using a shoe and drum type apparatus, adjust the brake shoe toe clearances to  $1.0 \pm 0.1$  mm ( $0.040 \pm 0.004$  inch). Fill the system with brake fluid, bleeding all wheel cylinders and the pressure gage to remove entrapped air. Operate the actuator manually to apply a pressure greater than the required operating pressure and inspect the system for leaks. Adjust the actuator and/or pressure relief valve to obtain a pressure of  $70 \pm 3.5$  kg/sq cm ( $1,000 \pm 50$  psi). A smooth pressure-stroke pattern is required when using a shoe and drum type apparatus. (Figure 4 of

SAE J1703b illustrates the approximate pressure buildup versus the master cylinder piston movement with the stroking fixture apparatus.) The pressure is relatively low during the first part of the stroke and then builds up smoothly to the maximum stroking pressure at the end of the stroke. The stroke length is about 23 mm (0.9 inch). This permits the primary cup to pass the compensating hole at a relatively low pressure. Using stroking fixtures, the WC piston travel is about  $2.5 \pm 0.25$  mm ( $0.100 \pm 0.010$  inch) when a pressure of 70 kg/sq cm is reached. Adjust the stroking rate to  $1,000 \pm 100$  strokes per hour. Record the fluid level in the master cylinder standpipe.

**S6.13.5 Procedure.** [Operate the system for  $16,000 \pm 1,000$  cycles at  $23 \pm 5^\circ\text{C}$  ( $73.4 \pm 9^\circ\text{F}$ ). Repair any leakage, readjust the brake shoe clearances, and add fluid to the master cylinder standpipe to bring to the level originally recorded, if necessary. Start the test again and raise the temperature of the cabinet within  $6 \pm 2$  hours to  $120 \pm 5^\circ\text{C}$  ( $248 \pm 9^\circ\text{F}$ ). During the test observe operation of wheel cylinders for improper functioning and record the amount of fluid required to replenish any loss, at intervals of 24,000 strokes. Stop the test at the end of 85,000 total recorded strokes. These totals shall include the number of strokes during operation at  $23 \pm 5^\circ\text{C}$  ( $73.4 \pm 9^\circ\text{F}$ ) and the number of strokes required to bring the system to the operating temperature. Allow equipment to cool to room temperature. Examine the wheel cylinders for leakage. Stroke the assembly an additional 100 strokes, examine wheel cylinders for leakage and record volume loss of fluid. Within 16 hours after stopping the test, remove the master and wheel cylinders from the system, retaining the fluid in the cylinders by immediately capping or plugging the ports. Disassemble the cylinders, collecting the fluid from the master cylinder and wheel cylinders in a glass jar. When collecting the stroked fluid, remove all residue which has deposited on rubber and metal internal parts by rinsing and agitating such parts in the stroked fluid and using a soft brush to assure that all loose adhering sediment is collected. Clean SBR cups in ethanol (isopropanol when testing DOT 5 fluids)

and dry. Inspect the cups for stickiness, scuffing, blistering, cracking, chipping, and change in shape from original appearance. Within 1 hour after disassembly, measure the lip and base diameters of each cylinder cup by the procedures specified in S6.13.4(a) and (b) with the exception that lip or base diameters of cups may now differ by more than 0.08 mm (0.003 inch). Determine the hardness of each cup according to S7.4. Note any sludge or gel present in the test fluid. Within 1 hour after draining the cylinders, agitate the fluid in a glass jar to suspend and uniformly disperse sediment and transfer a 100 ml portion of this fluid to a centrifuge tube and determine percent sediment as described in S7.5. Allow the tube and fluid to stand for 24 hours, recentrifuge and record any additional sediment recovered. Inspect cylinder parts, note any gumming or any pitting on pistons and cylinder walls. Disregard staining or discoloration. Rub any deposits adhering to cylinder walls with a clean soft cloth wetted with ethanol to determine abrasiveness and removability. Clean cylinder parts in ethanol and dry. Measure and record diameters of pistons and cylinders according to S6.13.4(a) and (b). Repeat the test if mechanical failure occurs that may effect the evaluation of the brake fluid. (35 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

#### S6.13.6 Calculation.

(a) Calculate the changes in diameters of cylinders and pistons (see S5.1.13(b)).

(b) Calculate the average decrease in hardness of the nine cups tested, as well as the individual values (see S5.1.13(c)).

(c) Calculate the increases in base diameters of the ten cups (see S5.1.13(e)).

(d) Calculate the lip diameter interference set for each of the ten cups by the following formula and average the ten values (see S5.1.13(f)).

$$\frac{D_1 - D_2}{D_1 - D_3} \times 100 = \text{percentage Lip Diameter Interference Set}$$

Where:

$D_1$  = Original lip diameter

$D_2$  = Final lip diameter

$D_3$  = Original cylinder bore diameter

**57. Auxiliary test methods and reagent standards.**

**57.1 Distilled water.** Non-referee reagent water as specified in ASTM D1193-70, "Standard Specifications for Reagent Water," or water of equal purity.

**57.2 Water content of motor vehicle brake fluids.** Use analytical methods based on ASTM D1123-59, "Standard Method of Test for Water in Concentrated Engine Antifreezes by the Iodine Reagent Method," for determining the water content of brake fluids, or other methods of analysis yielding comparable results. To be acceptable for use, such other method must measure the weight of water added to samples of the SAE RM-1 Compatibility Fluid within  $\pm 15$  percent of the water added for additions up to 0.8 percent by weight, and within  $\pm 5$  percent of the water added for additions greater than 0.8 percent by weight. The SAE RM-1 Compatibility Fluid used to prepare the samples must have an original ERBP of not less than  $182^{\circ}\text{C}$  ( $360^{\circ}\text{F}$ ) when tested in accordance with S6.1.

**57.3 Ethanol.** 95 percent (190 proof) ethyl alcohol, USP or ACS, or Formula 3-A Specially Denatured Alcohol of the same concentration (see Part 212 of Title 26, Code of Federal Regulations—U.S. Treasury Department, I.R.S. Publication No. 368). For pre-test washings of equipment use approximately 90 percent ethyl alcohol, obtained by adding 5 parts of distilled water to 95 parts of ethanol.

**57.4 Measuring the hardness of SBR brake cups.** Hardness measurements on SBR wheel cylinder cups and master cylinder primary cups shall be made by using the following apparatus and the following procedure.

**57.4.1 Apparatus.**

(a) *Anvil.* A rubber anvil having a flat circular top  $20 \pm 1$  mm ( $13\frac{1}{16} \pm \frac{1}{16}$  inch) in diameter, a thickness of at least 9 mm ( $\frac{3}{8}$  inch) and a hardness within 5 IRHDs of the SBR test cup.

(b) *Hardness tester.* A hardness tester meeting the requirements for the standard instrument as described in ASTM D1415-68, "Standard Method of Test for International Hardness of Vulcanized Natural and Synthetic Rubbers," and graduated directly in IRHD units.

**57.4.2 Procedure.** Make hardness measurements at  $23 \pm 2^{\circ}\text{C}$  ( $73.4 \pm 3.6^{\circ}\text{F}$ ). Equilibrate the tester and anvils at this temperature prior to use. Center brake cups lip side down on an anvil of appropriate hardness. Following the manufacturer's operating instructions for the hardness tester, make one measurement at each of four points one-fourth inch from the center of the cup and spaced 90 degrees apart. Average the four values, and round off to the nearest IRHD.

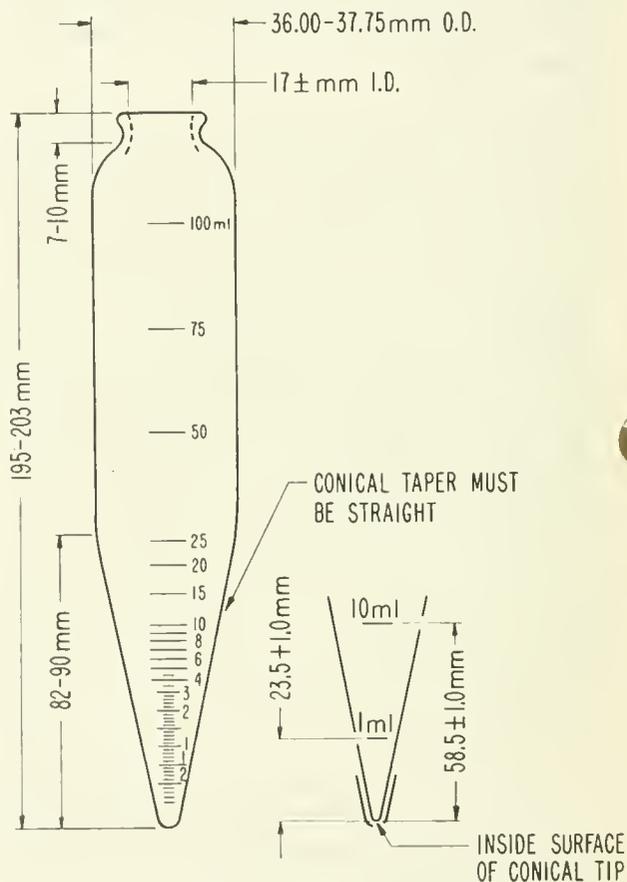


FIG. 6  
ASTM 8-in CENTRIFUGE TUBE

**57.5 Sediment by centrifuging.** The amount of sediment in the test fluid shall be determined by the following procedure.

**57.5.1 Apparatus.**

(a) *Centrifuge tube.* Cone-shaped centrifuge tubes conforming to the dimensions given in Figure 6, and made of thoroughly annealed

glass. The graduations shall be numbered as shown in Figure 6, and shall be clear and distinct. Scale-error tolerances and smallest graduations between various calibration marks are given in Table V and apply to calibrations made with air-free water at 20°C (68°F).

TABLE V—CALIBRATION TOLERANCES FOR 8-inch CENTRIFUGE TUBE

Range, ml	Subdivision, ml	Volume Tolerance, ml
0 to 0.1	0.05	±0.02
Above 0.1 to 0.3	0.05	±0.03
Above 0.3 to 0.5	0.05	±0.05
Above 0.5 to 1.0	0.10	±0.05
Above 1.0 to 2.0	0.10	±0.10
Above 2.0 to 3.0	0.20	±0.10
Above 3.0 to 5.0	0.5	±0.20
Above 5.0 to 10.0	1.0	±0.50
Above 10. to 25.	5.0	±1.00
Above 25. to 100.	25.	±1.00

(b) *Centrifuge*. A centrifuge capable of whirlring two or more filled centrifuge tubes at a speed which can be controlled to give a relative centrifugal force (rcf) between 600 and 700 at the tip of the tubes. The revolving head, trunnion rings, and trunnion cups, including the rubber cushion, shall withstand the maximum centrifugal force capable of being delivered by the power source. The trunnion cups and cushions shall firmly support the tubes when the centrifuge is in motion. Calculate the speed of the rotating head using this equation:

$$\text{rpm} = 265 \sqrt{\frac{\text{rcf}}{d}}$$

where: rcf = relative centrifugal force, and  
d = diameter of swing, in inches, measured between tips of opposite tubes when in rotating position.

Table VI shows the relationship between diameter, swing, relative centrifugal force (rcf), and revolutions per minute.

**57.5.2 Procedure.** Balance the corked centrifuge tubes with their respective trunnion caps in pairs by weight on a scale, according to the centrifuge manufacturer's instructions, and place them on opposite sides of the centrifuge head. Use a dummy assembly when one sample is tested.

TABLE VI  
ROTATION SPEEDS FOR CENTRIFUGES OF VARIOUS DIAMETERS

Diameter of swing, inches <sup>a</sup>	Rpm at 600 rcf	Rpm at 700 rcf
19	1490	1610
20	1450	1570
21	1420	1530
22	1390	1500

<sup>a</sup>Measured in inches between tips of opposite tubes when in rotating position.

Then whirl them for 10 minutes, at a rate sufficient to produce a rcf between 600 and 700 at the tips of the whirling tubes. Repeat until the volume of sediment in each tube remains constant for three consecutive readings.

**57.5.3 Calculation.** Read the volume of the solid sediment at the bottom of the centrifuge tube and report the percent sediment by volume. Where replicate determinations are specified, report the average value.

**57.6 Standard styrene-butadiene rubber (SBR) brake cups.** SBR brake cups for testing motor vehicle brake fluids shall be manufactured using the following formulation:

#### FORMULATION OF RUBBER COMPOUND

Ingredient	Parts by Weight
SBR type 1503 <sup>a</sup>	100
Oil furnace black (NBS 378)	40
Zinc oxide (NBS 370)	5
Sulfur (NBS 371)	0.25
Stearic Acid (NBS 372)	1
n-tertiary butyl - 2 - benzothiazole sulfenamide (NBS 384)	1
Symmetrical - dibetanaphthyl - p - phenylenediamine	1.5
Dicumyl peroxide (40 percent on precipitated CaCO <sub>3</sub> ) <sup>b</sup>	4.5
<b>TOTAL</b>	<b>153.25</b>

NOTE: The ingredients labeled (NBS\_\_\_\_) must have properties identical with those supplied by the National Bureau of Standards

<sup>a</sup>Philprene 1503 has been found suitable.

<sup>b</sup>Use only within 90 days of manufacture and store at temperature below 27°C (80°F).

Compounding, vulcanization, physical properties, size of the finished cups, and other details shall be as specified in Appendix B of SAE J1703b. The cups shall be used in testing brake fluids either within 6 months from date of manufacture when stored at room temperature below 30°C (86°F) or within 36 months from date of manufacture when stored at temperatures below minus 15°C (+5°F). After removal of cups from refrigeration they shall be conditioned base down

on a flat surface for at least 12 hours at room temperature in order to allow cups to reach their true configuration before measurement.

**[S7.7 Isopropanol.** ACS or reagent grade. (39 F.R. 30353—August 22, 1974. Effective: 10/1/74)]

**36 F.R. 11987  
June 24, 1971**

## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 117

### Retreaded Pneumatic Tires—Passenger Cars

(Docket No. 1-8)

Proposals to amend § 571.21 of Title 49, "Federal Motor Vehicle Safety Standards," to add a new standard on retreaded tires for use on passenger cars, were published October 14, 1967 (32 F.R. 14280), and March 5, 1970 (35 F.R. 4136). Prior to the latter notice, on April 10, 1969, a technical conference was held at which a discussion paper was offered for comments. Based upon this prior rulemaking activity, and after considering those comments received, a new motor vehicle safety standard is hereby issued that requires manufacturers of retreaded tires for passenger cars to comply with specified requirements.

The standard requires retreaded pneumatic tires for passenger cars to meet requirements for bead unseating, strength, endurance, and high speed performance identical to those specified for new pneumatic passenger car tires in Motor Vehicle Safety Standard No. 109, and to meet physical dimension and labeling requirements similar to the requirements of Standard No. 109. Many comments received in response to the notice of proposed rulemaking raised objections to these requirements. One objection was that the requirements make the retreader responsible for the performance of the casing as well as for his own retreading process. The casing is, however, one of the raw materials used in the retreading process. As such, the responsibility for the soundness of the casing can lie only with the retreader, as it is he who will determine that the casing is suitable for retreading purposes.

Some comments objected to the requirements because they believed them to be inappropriate for the retreaded tires. Their position was that Standard No. 109, in specifying requirements for new tires, took into account that new tires are designed to be used for more than one tread life.

Consequently, it is argued, it is unreasonable to subject a retreaded tire, whose casing has already undergone use through at least one tread life, to the same performance criteria as a new tire. The purpose of Standard No. 109, however, is to provide the public with passenger car tires that will perform safely under modern driving conditions. These conditions are the same whether a new tire or a retreaded tire is involved, and call for the same performance requirements, as far as is practicable. In agreement with this result is the position of certain parties who recommended that requirements for new and retreaded tires be identical. Their position was that retreaded tires must meet the same minimum performance requirements as new tires in order to prevent them from being considered as unsafe, or as less safe, than new tires.

Many comments particularly objected to the proposed requirement that retreaded tires must meet the same physical dimension requirements as new tires. It is recognized that tires may shrink during the retreading process. A dimensional requirement for retreaded tires is necessary, however, to ensure that retreaded tires labeled a certain size are within a specified maximum tolerance of the size. Consequently, as there may be difficulty in requiring retreaded tires to meet the same physical dimension requirements as new tires, the standard as issued requires that the section width and the overall width of retreaded tires not exceed by more than 10 percent the figure provided as the section width in Appendix A of Standard No. 109. This is a slight relaxation of the proposed requirement, which specified a 7-percent tolerance.

Several objections were also raised to the proposed requirements for tire casings. These pro-

posals were that casings used in retreaded tires not have bead wire or cord fabric exposed either before or during the retreading process, that they not have a belt or ply removed during retreading, and that casings contain the labels on them by the original tire manufacturer pursuant to Standard No. 109. Many comments objected to the prohibition of retreading on casings having exposed cord fabric either before or during processing. The argument was presented that cord fabric exposed during the buffing part of the retreading process can be and often is repaired without affecting the service life or safety of the retreaded tire. As an alternative, some comments suggested that this requirement be changed to require that cord fabric not be "damaged." Once cord fabric has been exposed, however, it is far more likely to have been worn, exposed to moisture, or damaged in some other way. Furthermore, the suggested language would be nearly impossible to enforce, as any determination of "damage" would be largely subjective. Requiring that the fabric not be exposed, however, is a far less subjective test, and is consequently less subject to error. The proposed requirement has accordingly been retained.

Objections were also raised to the requirement that would prohibit the removal of a belt from a tire casing during processing. The argument presented was that belt removal, and the addition or replacement of a belt as well, should be allowed if the finished tire can meet the specified requirements. The agency has concluded, however, that belt removal, addition, and replacement raise questions concerning compatibility of materials and tire performance for which no data is presently available. Until such time as information is available on the effects on tire performance of belt removal, addition, or replacement, these practices will be prohibited in the manufacture of retreaded tires.

The proposed rule would have required retreaded tires to be labeled with the same information required on new pneumatic tires by Standard No. 109. The preamble to the notice indicated that this provision, requiring all original labeling to be on the casing and to be retained through the retreading process, would be accompanied by

changes in the labeling requirements of Standard No. 109 that would require the original label to be placed in an area of the new tire sidewall where it would not be subject to destruction either during use or during retreading. As this amendment has not been made to Standard No. 109, the proposed labeling requirements are being modified. They require that each casing be one that has been labeled pursuant to S4.3 of Standard No. 109, but that the completed retreaded tire need only retain enough of the original label to display each item of required information in at least one location. The labeling requirements also provide that the retreaded tire be certified by labeling the tire with the symbol DOT, located on the tire as specified in Part 574, "Tire Identification and Record Keeping."

The notice of proposed rule making would have required retreaders to submit certain information to the agency, including a statement that records would be maintained by the retreader for a period of at least 3 years. These record keeping requirements involved records of materials used in the retreading process, records of process control, and records of performance tests and reported defects and failures. The purpose of these proposed requirements would have been to provide information to assist retreaders in ascertaining which tires might be suspect in the event of a finding of nonconformity or a safety-related defect. In consideration of comments received, the standard as now issued does not contain record keeping requirements, and record keeping by retreaders will be on a voluntary basis, consistently with the other standards. The NHTSA strongly recommends, however, that retreaders retain information on the materials and processes that they use, so that in the event of a defect or noncompliance they will be able to determine which tires are involved.

Similarly, the standard does not require retreaders to maintain records of performance tests or of reported defects and failures. Retreaders should be aware, however, that they are required to exercise due care in manufacturing retreaded tires to comply with this standard, and that information of this type is likely to be an important step in proving due care.

Effective date: January 1, 1972.

Issued on April 14, 1971.

In consideration of the foregoing, § 571.21 of Title 49, Code of Federal Regulations, is amended by adding a new motor vehicle safety standard, No. 117, "Retreaded Pneumatic Tires: Passenger Cars" as set forth below.

Douglas W. Toms,  
Acting Administrator

**36 F.R. 7315**  
**April 17, 1971**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117

### Retreaded Pneumatic Tires

(Docket No. 1-8)

This notice is issued in response to petitions for reconsideration received concerning Motor Vehicle Safety Standard No. 117, "Retreaded Pneumatic Tires," 49 CFR § 571.21, published April 17, 1971 (36 F.R. 7315).

Timely petitions were received from 8 parties; Bandag Incorporated, National Tire Dealers and Retreaders Association (by the firm of Sellers, Conner & Cuneo), The Mississippi Independent Tire Dealers Association, Alabama Tire Dealers and Retreaders Association, and The Louisiana Independent Tire Dealers Association, Owens-Corning Fiberglas Corp., American Retreaders Association, the Goodyear Tire and Rubber Company, the Rubber Manufacturers Association, and the B.F. Goodrich Tire Company. Certain other petitions were received more than thirty days after publication of the standard, and while they are petitions for rulemaking under the agency's procedural rules (49 CFR § 553.35) they have been considered in the issuance of this notice.

1. *Availability of casings.* Paragraph S5.2.3 of the standard requires that each retreaded tire be manufactured with a casing that has been labeled pursuant to S4.3 of Motor Vehicle Safety Standard No. 109. In effect, only casings from tires manufactured on or after August 1, 1968, have been required to have this information permanently labeled on the tire. According to many petitions, the period between August 1, 1968 and January 1, 1972, the standard's effective date, has been too short to allow the accumulation of a sufficient supply of casings that bear the required labeling. Many petitioners therefore requested that casings labeled pursuant to Standard No. 109 not be required until 1974 or 1975. These requests are denied. However, in order to make additional casings available the standard

has been amended to allow, between January 1, 1972 and January 1, 1974, the use of some casings labeled with specific fractional markings that were first introduced in 1965. These casings are those for use on wheels having diameters of 14 or 15 inches, marked with the size designations 6.45, 6.85, 6.95, 7.35, 7.75, 8.15, 8.25, 8.45, 8.55, 8.85, 8.90, 9.00, or 915, and labeled with certain information as a result of the "Tire Advertising and Labeling Guides" which were adopted by the Federal Trade Commission on July 5, 1966. In situations where these casings are used, the retreader is required to label them further, in a permanent manner, with a maximum load rating and maximum permissible inflation pressure obtained from a table incorporated into the standard. Casings that contain the specified information, together with the maximum load rating and maximum permissible inflation pressure added by retreaders, will be labeled with most of the information required on new tires by Standard No. 109, and in accordance with Section 201 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1421). Manufacturers who use these older casings should be aware, however, that retreaded tires manufactured with them must meet the same performance requirements as tires manufactured with casings that have been certified to be in compliance with Standard No. 109.

2. *Application of the DOT certification mark.* Paragraph S6 of the standard requires the manufacturer to certify each retreaded tire by affixing to the tire the symbol DOT, as provided in section 574.5 of the Tire Identification and Recordkeeping regulations. The Administration takes the position that affixing the DOT before the effective date of the standard is inconsistent with the intent of the National Traffic and Motor

Vehicle Safety Act, as it is only with respect to tires manufactured after the effective date that certification has legal significance. At the same time, under the Act all retreaded tires manufactured on or after January 1, 1972, must contain the DOT mark. Certain petitioners have indicated that it would be impossible, without a substantial disruption of business, for no tire to have a permanently affixed DOT symbol on or before December 31, 1971, and for all tires manufactured on January 1, 1972, and thereafter to have such a symbol. To remedy this problem the standard is being amended to allow the use of a paper label containing prescribed language to serve as a valid certification from January 1, 1972, through February 29, 1972.

3. *Retention of labeling.* Certain petitions requested that paragraph S6.2, which requires certain labeling on the casing to be retained, be amended because the labeling information sometimes appears in an area on the tire that is subject to buffing. Consequently, it is argued, it is impossible to retain the information through the retreading process. These requests are denied. The required labeling is essential to the appropriate use of the tire and varies from casing to casing. It has been determined that the most satisfactory way to ensure that correct information of this type appears on the completed tire is for the casing manufacturer's labeling to be retained. Casings that cannot be retreaded without destruction of the labeling will consequently be unsatisfactory for use.

4. *Casing with exposed cord.* Many petitioners objected to the requirements of paragraph S5.2.1 that prohibit the retreading of casings that have cord fabric exposed before or during processing. The argument presented is that such tires can be retreaded as effectively and will provide the same level of performance as tires manufactured from casings on which cord fabric is not exposed, as long as cords that are exposed are not damaged. These requests are denied.

The NHTSA recognizes that under optimum conditions, careful buffing that barely exposes, but does not touch, the tire cords can produce satisfactory results. In practice, however, tire buffing is often not done by precision methods or highly trained personnel, especially in the case

of smaller tire retraders. Any buffing that damages or removes part of the tire cords reduces the strength of the carcass at that point. Thus, buffing to the cord materially increases the possibility of producing unsafe tires.

Furthermore, exposing tire cords in the retreading process can cause the retreaded tire to be unsafe even if the cord is not damaged. In the manufacture of new tires, the cords that eventually make up the carcass are passed through complex adhesive solutions of resin and latex, before being dried and coated with rubber. Exposed cords in buffed retread carcasses generally do not receive comparable treatment to bond them to the overlaid rubber. Also, exposed carcass cords that are not promptly covered can absorb moisture from the air, which substantially weakens them.

Since the exposure of belts in belted tires does not carry with it the danger of impairment of carcass strength as does the exposure of ply cords, the standard is amended to make it clear that exposure of belt material during processing is allowed. Belt material may not, however, as specified in S5.2.1, be removed, added, or replaced. The petitions in this regard are denied for the reasons specified in the preamble to the standard published April 17, 1971.

5. *Physical dimension tolerances.* Several petitions noted that although retreaded tires may shrink during the retreading process, the physical dimension requirements of S5.1.2 allow only for a 10% tolerance over the maximum width to allow for service growth. An amendment to allow some shrinkage was requested. It has been determined that a minus 3% deviation from the specified section width is justified, and the standard is amended accordingly.

*Effective date:* January 1, 1972.

In the light of the above, Federal Motor Vehicle Safety Standard No. 117 in § 571.21 of Title 49, Code of Federal Regulations, is hereby amended. . . .

Issued on October 22, 1971.

Douglas W. Toms  
Administrator

36 F.R. 20877  
October 30, 1971

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117****Retreaded Pneumatic Tires****(Docket 1-8; Notice 5)**

The purpose of this notice is to amend Motor Vehicle Safety Standard No. 117, "Retreaded Pneumatic Tires" to increase the number of allowable casings that may be retreaded, to allow ply cord to be exposed in a limited, specified manner during the retreading process, and to modify the labeling requirements. Motor Vehicle Safety Standard No. 117 was issued April 17, 1971 (36 F.R. 7315), and amended, in response to petitions for reconsideration, on October 30, 1971 (36 F.R. 20877). Since that time certain segments of the industry have requested additional changes to the standard. This amendment is based on those requests.

1. One major objection that was raised concerns the prohibition against exposing cord in the ply area of the tire during processing. The issuance of April 17, 1971, prohibited any tire from being retreaded on which cord had been exposed either before or during the retreading process. The standard was further amended in the issuance of October 30, to allow belt material, but not ply cords, to be exposed during the retreading process.

The prohibition against retreading a casing that has exposed cord is based primarily on the fact that cord that has been exposed may have been damaged, thereby weakening the casing and increasing the chance that the completed tire will be unsafe. This is especially true where cord is exposed during the life of the original tire, as exposure of cord in this case will generally have been caused by excessive wear. However, cord has heretofore been exposed during the buffing part of many retreading processes, as a method of determining whether a sufficient amount of old tread rubber has been removed before the application of the new tread. The NHTSA recognizes the importance of removing a sufficient

amount of old tread, and that, as stated in the October 30 notice, "careful buffing that barely exposes, but does not touch, the tire cords can produce satisfactory results." The Administration retained the prohibition against buffing to the cord, except for belt material, on the basis of the finding that it could result in damage to the cord and create unsafe tires.

After reviewing additional information and arguments that have been presented by interested parties, the NHTSA has now determined that buffing to the ply cord in very limited circumstances can be allowed without incurring the risk that cords will be damaged during buffing. The amendment issued herewith allows buffing during the retreading process only at a splice, that is, where two segments of the same ply overlap. Exposure of cord at this point will not materially affect casing strength, as there still will be one layer of unexposed cord at the splice due to the ply overlap. Exposure of ply cord at a location other than a splice remains prohibited.

2. The standard as issued April 17, 1971, allowed only casings that had been labeled pursuant to Motor Vehicle Safety Standard No. 109 (49 CFR § 571.109) to be used in the manufacture of retreaded tires. The categories of casings that could be retreaded under the standard were expanded in the amendment of October 30, 1971. Certain other additions, namely, the inclusion of certain 13-inch and 15-inch tire sizes and series 70 tires, each of which must contain certain labeling, are incorporated by this amendment.

3. In the preamble to the amendment of October 30, 1971, the NHTSA denied requests to amend the requirement that the original labeling on casings be retained on the completed retreaded tire, and that casings without retainable

labeling be discarded. The NHTSA's position was that retention of the original labeling was the most satisfactory way to ensure that each retreaded tire would be labeled with the appropriate safety information, and it was recognized that some casings would have to be rejected because of this requirement. Information which the agency has recently received, however, indicates that this requirement may reduce the number of retreadable casings to a degree not anticipated. The shortage of casings will result because the labeling on many casings lies in an area where it would be removed during the retreading process. Although the problem had been described in comments at previous stages of rulemaking, specific data as to the number of available casings was presented to the agency after the October 30 amendment.

The agency has concluded after review of this data that to require the discarding of casings without retainable labeling could substantially impair the industry due to a shortage of casings. The NHTSA has accordingly decided to revoke these requirements of the standard and to propose an alternate labeling scheme. A notice of proposed rulemaking to that effect is published in this issue of the *Federal Register*. Much of the difficulty experienced by retreaders in finding casings that bear labeling not subject to destruction results from the fact that many new tires carry their required information in locations such that it is removed during the retreading process. The NHTSA is therefore issuing an

additional notice of proposed rulemaking which would amend Standard No. 109 to require the labeling in question to be placed in an area where it will not be subject to destruction during the retreading process.

This amendment to Standard No. 117 does not change the requirement that only certain casings containing original labeling information be used in the manufacture of retreaded tires, but specifies that, at present, this labeling need not be retained on the completed tire.

In light of the above, section 571.117 of Title 49, Code of Federal Regulations (Motor Vehicle Safety Standard No. 117) is hereby amended. . . .

*Effective date:* January 1, 1972. The amendments issued herein relieve restrictions and impose no additional burdens on any person. Accordingly, it is found, for good cause shown, that an effective date less than 180 days, and less than 30 days, from the day of issuance is in the public interest.

This notice is issued pursuant to sections 103, 112, 113, 114, 119, and 201 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421) and the delegation of authority at 49 CFR 1.51.

Issued on December 21, 1971.

Douglas W. Toms  
Administrator

**36 F.R. 24814**  
**December 23, 1971**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117

### Retreaded Pneumatic Tires

(Docket No. 1-8; Notice 7)

The purpose of this notice is to reissue, with certain amendments, Motor Vehicle Safety Standard No. 117, "Retreaded Pneumatic Tires." Standard No. 117 was published April 17, 1971 (36 F.R. 7315). In response to petitions for reconsideration, the standard was amended October 30, 1971 (36 F.R. 20877). As a result of additional evidence which was presented to the agency regarding the requirements for labeling of retreaded tires and other issues, the standard was amended again on December 23, 1971 (36 F.R. 24814). On the same day a notice of proposed rulemaking was also published proposing new labeling requirements (36 F.R. 24825). This notice is issued both in response to two petitions for reconsideration concerning the amendment of December 23, and to incorporate amendments based on the notice of proposed rulemaking of December 23.

The issues raised by the two petitions, one from the National Tire Dealers and Retreaders Association and the other from the Rubber Manufacturers Association, concern the availability of casings, casing labeling, and the physical dimension requirements of the standard. Requirements for labeling retreaded tires, which are related to the requirements for casing labeling, are dealt with below in the discussion of the amendments that are based on the notice of proposed rulemaking.

*Availability of Casings.* The petitions requested that additional casing sizes, namely 5.20, 6.40, 7.50, 8.00, 8.20, 8.50, 8.85, 9.50, 145, 155, 165, 175, 185, 195, and 205 be added to the list of usable casings. The request that sizes 5.20, 6.40, 7.50, 8.00, 8.20, 8.50, and 9.50 be added is denied. One purpose of Standard No. 117 is to limit usable casings to those manufactured within a limited period before the effective date of the

standard. While these sizes were in fact manufactured during the period 1965-1967, unlike sizes presently allowed they were also manufactured in large numbers well before this period. It has not been demonstrated that these particular casing sizes are needed in order to ensure an adequate casing supply, and consequently they are not added to the list of usable casings. However, the remaining requested casing sizes, 8.85, 145, 155, 165, 175, 185, 195, and 205 are permitted to be used by this amendment as it appears that they were not in widespread use before the other sizes permitted to be used under the standard. In addition, the NHTSA has determined that some additional sizes, mostly radial sizes, may also be retreaded, and the proposed Table I has been amended accordingly and made part of the standard.

*Casing labeling.* As amended December 23, 1971, paragraph S5.2.4 of the standard required retreaded tires to be manufactured using casings that were either labeled in accordance with S4.3 of Standard No. 109, or until January 1, 1974, of certain enumerated sizes manufactured before the effective date of Standard 109. They were to be labeled with: (1) the generic name of the cord material used in the plies of the tire, (2) the actual number of plies, (3) the size of the tire, and (4) whether the tire is tubeless or tube type. The petitions have requested that casings not be required to contain this information.

The reason for requiring the casing, whether manufactured before or after the effective date of Standard 109, to contain the specified information is to provide information that retreaders can retain or carry over for the purpose of labeling retreaded tires. The only reliable source for much of this information is the casing.

The petitions have indicated, however, that not all of the information appears on many of the pre-Standard No. 109 casings, or appears in such a way that it cannot practicably be used for purposes of relabeling. The NHTSA has accordingly decided to modify the labeling requirements for pre-Standard No. 109 casings, and to make requirements for "DOT" casings consistent with them. As amended in this issuance, casings need only be labeled with (a) the tire's size designation, and (b) its actual number of plies or ply rating. Information obtained by NHTSA has indicated that almost all casing sizes allowed to be used by the standard had this information permanently labeled onto the tire sidewall.

The standard requires the casing to contain its original size marking. It also requires that the designated size of the retreaded tire be no larger (although it may be smaller) than the size of the original casing. Size is the chief criterion for consumers in the purchase of tires. The NHTSA has concluded that retreaded tires' sizes must be related to original casing markings in order to provide assurance that the correct size is placed on the retreaded tire, and that retreaders should not be allowed to determine casing size or the size of retreaded tires by any other means. Both petitions for reconsideration requested that this item of information not be required, and in this regard they are denied.

Casings are also required by this amendment to be labeled with either the tire's actual number of plies, or its ply rating. This modifies the proposed requirement that the "actual number of plies" appear. This information is also being required by today's amendment to appear on the retreaded tire. Ply rating is the basic criterion for determining the tire's maximum permissible inflation pressure and its maximum load. It is required to be on the casing because it cannot be determined with assurance except from the original tire marking. Some tires manufactured before the effective date of Standard No. 109 were not labeled with the actual number of plies, but of those that were not, almost all contained the ply rating. Consequently, requiring either actual number of plies or ply rating to be on casings will not reduce significantly the number of otherwise retreadable casings, and insofar as

the petitions requested complete deletion of this requirement, they are denied.

The standard is amended as requested by the petitions to eliminate the requirement that the generic name of the cord material, and whether the tire is tubeless or tube-type, appear on the casing. It appears that industry practice before the effective date of Standard No. 109 varied in the manner that information of this type was labeled on new tires, and that requiring the information to be on the casing would unnecessarily restrict the types of usable casings.

Mention was made in the petitions of the possibility of information appearing on new tires being rubbed off in service, making casing labeling requirements difficult to meet. The NHTSA is of the opinion that, while this is a possible occurrence, complete obliteration of the labeling is unlikely. More important, however, is the fact that casings where the labeling does not appear should not, from a safety standpoint, be retreaded. The NHTSA has concluded that despite any consequent reduction in the number of casings, retreaders should not be left to their own devices in determining casing size and ply rating on completed tires, but that such information, for the safety of consumers, must be based on the casing's original markings.

*Physical dimension requirements.* The petitions have asked that the physical dimension requirements be amended to allow for a 3 percent minus deviation from the minimum size factor specified for the tire's size designation and type. The standard presently allows a plus 10 percent, and minus 3 percent deviation from the maximum section width only. The requests are based on the tendency of certain retreaded tires to shrink temporarily as a result of the retreading process.

These requests are denied. Data obtained from NHTSA tests indicate that the present requirements are being met, and that further relief is unnecessary. However, as a result of a comment received, paragraph S5.1.2 is being rewritten for purposes of clarity.

*Labeling.* The notice of proposed rulemaking published December 23, 1971 (36 F.R. 24825), specified a system by which retreaded tires would be required to be labeled with certain safety

information. The use of an affixed label would be allowed for a limited period following the standard's effective date, but after that period the information would be required to be permanently molded into or onto the tire sidewall. The final rule issued today adopts this system, with certain modifications in the information to be provided, resulting from the amendments to paragraph S5.2.4. The information is the same for both affixed and molded labeling, and consists of (a) the tire's size designation, (b) its maximum permissible inflation pressure, (c) its maximum load, (d) the actual number of plies, ply rating, or both, (e) the words "tubeless" or "tube type" as applicable, (f) the words "bias/belted" if the tire is of bias-belted construction, and (g) the word "radial" if the tire is of radial construction.

Size, maximum load, and maximum permissible inflation pressure are required because each is necessary for proper selection and use of passenger car tires. While the standard requires the size to be based on the original casing size, the values for maximum load and inflation pressure may, where necessary, be based on a table incorporated into the standard. The values in the table are based on the values for the tire's size designation and type as they appear in Standard No. 109 (§ 571.109), and are determined according to the tire's size and ply rating, both of which are required to be on the casing.

The words "bias/belted" and "radial" are required, where appropriate, in order to identify tires of different types of construction. There is presently a large body of opinion, supported by NHTSA, that mixing tires of differing construction types on the same vehicle or same axle of a vehicle is not in the best interests of safety. In the case of the requirement that the words "bias/belted" appear, while not proposed in the notice of December 23, the information would have been available if the proposed language, "actual number of plies in the sidewall and the actual number of plies in the tread area, if different," had been retained. The NHTSA does not believe labeling the words "bias/belted" will present significant problems for retreaders as most belted tires were manufactured after the effective date of Standard No. 109, and are consequently identified as such. Those that were

not usually contained some similar identification. Moreover, it appears that after proper buffing, belted tires exhibit visible differences from pure bias construction.

The word "radial" is also being required, despite the fact that as proposed it would not have been required until permanent markings were required. At the time of the proposal, however, NHTSA was not aware that radial tires were being retreaded. It appears now that they are, and in the interests of safety the term "radial" is required to be added to all retreaded radial tires.

The words "tubeless" or "tube type" are also required to be labeled onto completed retreaded tires. Almost all of the comments considered this information to be safety related. Even though not required to appear on the casing, the information will be available to retreaders, as (1) most tubeless casings were in fact so marked, and (2) a tube-type tire, in most cases, can be identified by the lack of inner lining that is present on tubeless tires. In those cases where identification is not possible, the casing should not be retreaded, as this information would likewise be unknown at time of sale.

The proposed requirement that the tire be labeled with the generic name of its cord material is not retained. The comments have argued, and NHTSA agrees, that in the case of retreaded tires this information is not substantially related to safety. This, combined with the fact that it appears only on certain casings, where it must if it is to be relabeled, has convinced the NHTSA that at present the requirement should not be included in the standard.

Many comments opposed the requirement that labeling be molded into or onto the tire sidewall until such a time as new tire labeling was required to be placed in a position where it would not be buffed off during retreading, and could thus be retained through the retreading process. These comments argued that permanent labeling of this type proposed was unreasonably difficult to apply to retreaded tires because tires that would require different labeling are retreaded in the same matrix. This would require constant, time consuming changing of the matrix, and a resultant high possibility of error.

Tires, however, may be subject to many applications during their useful life. They are transferred from wheel to wheel, and from vehicle to vehicle, and each time this takes place the information on the tire sidewall becomes important. Permanent labeling is therefore required if the information is to perform its function, as it can be readily assumed that affixed labels will last little longer than the first time the tire is mounted. Affixed labels, as indicated in the preamble to the proposed rule of December 23, are to be permitted only because methods for permanent labeling are not immediately available to retreaders, and not as a viable substitute for permanent labeling. The NHTSA disagrees with industry claims that permanent labeling presents unreasonable technical problems. Methods for permanent labeling developed for compliance with the Tire Identification and Record-keeping Regulations (49 CFR Part 574) can be readily adapted to meet these requirements. In fact, of all the information required in today's amendment, only the "size" and "maximum load rating" will vary to a significant amount from casing to casing. Each of the other items of required information can be applied uniformly to large groups of casings and need not be changed from tire to tire if proper sorting is done before retreading occurs.

In light of the above, Motor Vehicle Safety Standard No. 117, "Retreaded Pneumatic Tires,"

§ 571.117 of Title 49, Code of Federal Regulations, is revised . . .

*Effective date:* The standard's effective date of January 1, 1972, has been stayed as a result of court litigation, which is still pending. The NHTSA does not expect manufacturers to maintain a state of constant preparation so as to be able to comply with the standard as of the time the stay, should the court so decide, is lifted. It has determined, therefore, that additional leadtime will be necessary. Accordingly, the provisions of the standard, except those regarding labeling, shall become effective 30 days from the day the stay is lifted. The labeling requirements requiring the use of affixed labels shall become effective 90 days from that date, and those for permanent labeling, approximately one year from that date. Notice of exact dates will be published in the *Federal Register* at the time the stay is lifted.

This notice is issued pursuant to the authority of sections 103, 112, 113, 114, 119 and 201 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. §§ 1392, 1401, 1403, 1407, 1421); and the delegation of authority at 49 CFR 1.51.

Issued on March 17, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 5950**  
**March 23, 1972**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117

### Retreaded Pneumatic Tires

(Docket 1-8; Notice 9)

This notice revokes high speed and endurance requirements in Motor Vehicle Safety Standard No. 117, "Retreaded Pneumatic Tires," in accordance with an order of the United States Court of Appeals for the Seventh Circuit in *H & H Tire Company v. Volpe*, No. 71-1935, 7th Cir., December 5, 1972. It also specifies effective dates for provisions of the standard subject to a stay that was entered by the court on December 31, 1971, and removed by its order.

In a notice published March 23, 1972 (37 F.R. 9590), the NHTSA indicated that it did not believe retreaders should be required to maintain a state of constant preparation, so as to be able to conform to the standard immediately following the lifting of the stay by the reviewing court. The NHTSA took this position although the stay had been imposed only 24 hours before the standard was to become effective, and retreaders should have by that time taken all necessary steps to achieve compliance. The notice accordingly specified that those requirements of the standard dealing with matters other than labeling would become effective approximately 30 days after the stay imposed by the court had been lifted. Requirements dealing with affixed labels (S6.3.1) were to become effective in 90 days, and requirements for permanent labeling (S6.3.2) in one year.

When these dates were projected, however, the NHTSA had assumed a decision would be rendered by the court in a short time. That assumption proved incorrect, and the NHTSA has determined that more leadtime than that specified on March 23, 1972, should be allowed. This leadtime will allow retreaders to use up their already acquired inventory of casings, and to obtain labels to conform to the affixed labeling requirements.

This notice provides, therefore, that provisions of the standard except those dealing with permanent labeling are effective 120 days from the day of publication. The permanent labeling requirements of the standard are effective one year from the day of publication. The NHTSA is of the opinion that 120 days is sufficient under the circumstances for retreaders to take whatever remaining steps are necessary to achieve conformity with these requirements.

In light of the above, Motor Vehicle Safety Standard No. 117, "Retreaded Pneumatic Tires", 49 CFR 571.117, is amended. . . .

*Effective date:* June 1, 1973, except for the provisions of paragraph S6.3.2, which are effective on February 1, 1974. The requirements of this standard were originally issued April 17, 1971, to become effective January 1, 1972. The standard in its present form was published March 23, 1972, but did not take effect due to a stay imposed on December 31, 1971. Accordingly, adequate lead time has already been provided for any long-range steps necessary for compliance. The public was notified of expected effective dates by the notice of March 23, 1972.

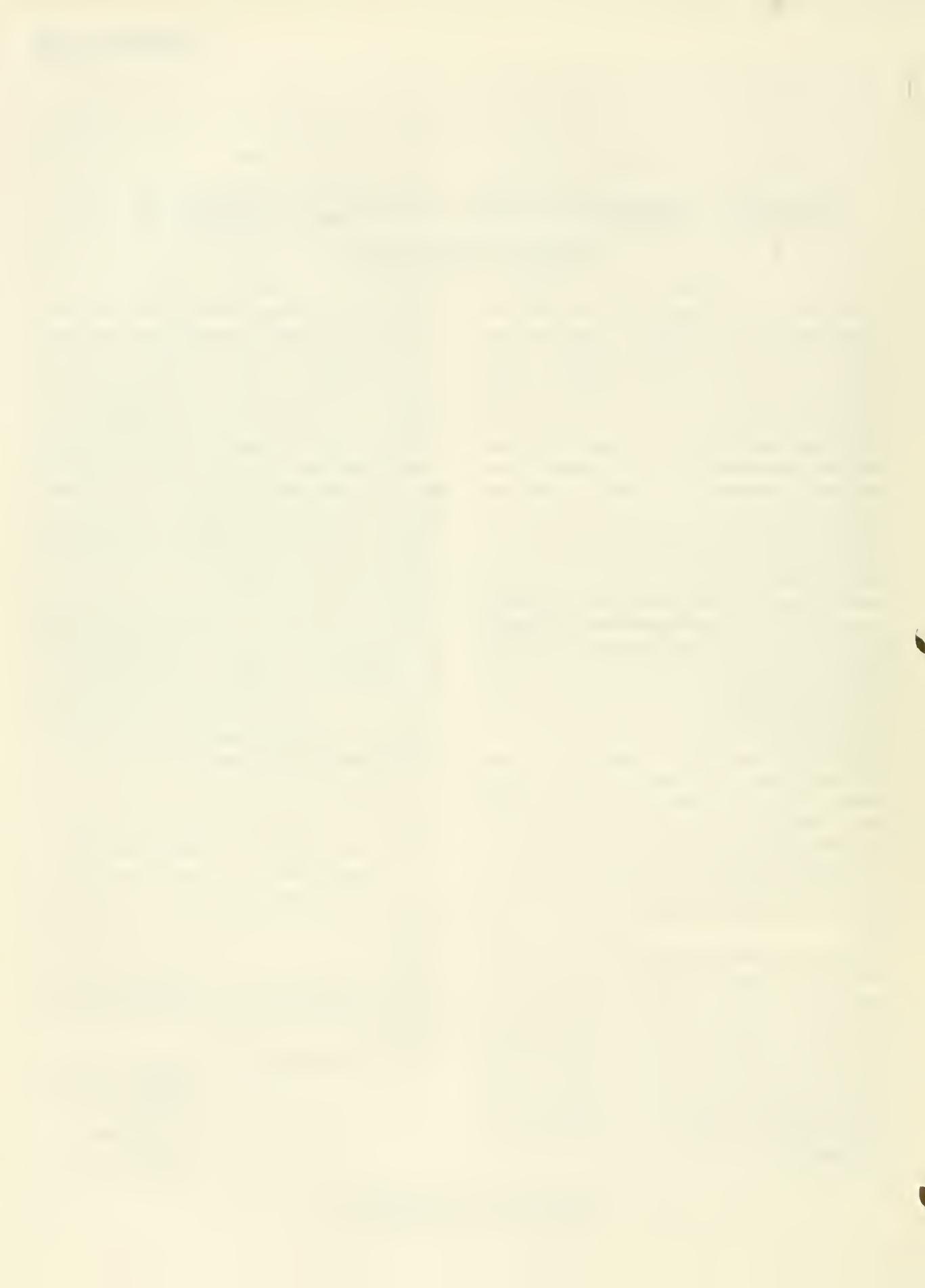
It is therefore found, for good cause shown, that an effective date less than 180 days from the date of publication of this notice is in the public interest.

(Sec. 103, 112, 113, 114, 119, 201, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421; delegation of authority at 49 CFR 1.51)

Issued on January 24, 1973.

Douglas W. Toms  
Administrator

38 F.R. 2982  
January 31, 1973



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117****Retreaded Pneumatic Tires****(Docket No. 71-23; Notice 3)****(Docket No. 1-8; Notice 10)**

This notice amends Motor Vehicle Safety Standards Nos. 109 and 117 (49 CFR 571.109) to reduce the minimum size of permanent safety labeling to 0.078 inches. Motor Vehicle Safety Standard No. 109, "New Pneumatic Tires," was amended November 4, 1972 (37 F.R. 23536), to specify both a location on the tire sidewall for safety labeling and a labeling size of not less than  $\frac{3}{32}$  of an inch. Motor Vehicle Safety Standard No. 117, "Retreaded Pneumatic Tires", was amended March 23, 1972 (37 F.R. 9590), to specify permanent labeling of the same minimum size.

The Michelin Tire Company has protested that the  $\frac{3}{32}$  inch minimum size is inconsistent with the existing practice of European tire manufacturers of labeling tires in letters having a size of 0.078 inches (2mm). It has pointed out that as a consequence of the amendment, European tire manufacturers will have to increase the size of all existing labeling. The NHTSA has concluded that the difference between letters 0.078 inches in size and those of 0.093 inches is not significant, and does not justify the resultant expense to manufacturers of modifying tire molds. By this notice the NHTSA therefore reduces the minimum size to 0.078 inches for labeling required by S4.3 of Standard No. 109.

Because the permanent labeling provisions of Standard No. 117 are intended to be ultimately met with new tire labeling, the size requirements for permanent labeling in that standard are also modified.

In light of the above, Motor Vehicle Safety Standard No. 109, 49 CFR 571.109, and Motor Vehicle Safety Standard No. 117, 49 CFR 571.117, are amended . . . .

Effective dates: July 1, 1973, for the amendment to S4.3 of 49 CFR 571.109; February 1, 1974, for the amendment to S6.3.2 of 49 CFR 571.117. These amendments relieve an unnecessary restriction without a significant effect on motor vehicle safety. Consequently, it is found for good cause that notice and public procedure thereon are unnecessary, and that an effective date less than 180 days from the day of issuance is in the public interest.

(Secs. 103, 112, 113, 114, 119, 201, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421; delegations of authority at 49 CFR 1.51.)

Issued on March 8, 1973.

James E. Wilson  
Acting Administrator

**38 F.R. 6999**  
**March 15, 1973**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117****Retreaded Pneumatic Tires****(Docket No. 1-8; Notice 11)**

This notice amends paragraph S6.2 of Standard No. 117, Retreaded Pneumatic Tires (49 CFR 571.117), to allow the temporary certification label permitted by that paragraph to be affixed to the sidewall of the tire, as well as to the tread. Federal Motor Vehicle Safety Standard No. 117 was published March 23, 1972 (37 F.R. 5950) and amended January 31, 1973 (38 F.R. 2982). Although the standard relating to the placement of a conformity label stated that the temporary label would be affixed "to the tread of the tire," the NHTSA did not intend to be restrictive of the label's location, and the limiting language was inadvertent.

*Effective date:* June 1, 1973. This amendment is corrective in nature and imposes no additional

burden on any person. Accordingly, it is found that notice and public procedure thereon are unnecessary, and that good cause exists for an effective date less than 180 days from the day of publication.

(Secs. 103, 112, 113, 114, 119, 201, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421; delegation of authority at 49 CFR 1.51)

Issued on April 12, 1973.

James E. Wilson  
Acting Administrator

**38 F.R. 9668**  
**April 19, 1973**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117

### **Retreaded Pneumatic Tires**

(Docket No. 1-8; Notice 14)

On August 21, 1973 (38 F.R. 22493), the NHTSA proposed to amend 49 CFR § 571.117 (Motor Vehicle Safety Standard No. 117, "Retreaded Pneumatic Tires") to revise retreaded tire physical dimension requirements, to facilitate the labeling of bias/belted tires, to specify acceptable methods of permanent labeling, and to reduce labeling size. Interested persons were given the opportunity to submit comments by September 24, 1973. Only three comments were submitted within the comment period, none of which objected to the substance of the proposed amendments. Accordingly, the proposed revision of paragraphs S5.1.2, S6.3.1, and S6.3.2 of 49 CFR § 571.117 is adopted without change as set forth below.

*Effective date:* The amendments to S5.1.2 and S6.3.1 are effective January 9, 1974. The amend-

ment to S6.3.2 is effective February 1, 1974. These amendments facilitate compliance with the standard, relieve restrictions, and do not reduce the level of safety established by the standard. Accordingly, good cause exists and is hereby found for an effective date less than 30 days from publication.

(Secs. 103, 112, 113, 114, 119, 201 Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421; delegations of authority at 49 CFR 1.51.)

Issued on January 3, 1974.

James B. Gregory  
Administrator

**39 F.R. 1443**  
**January 9, 1974**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117

### Retreaded Pneumatic Tires

(Docket No. 1--8; Notice 15)

This notice and an accompanying notice of proposed rulemaking (39 F.R. 3571) are intended to implement the decision of the United States Court of Appeals for the District of Columbia in the *National Tire Dealers' and Retreaders' Association, Inc., v. Brinegar* (Case No. 72-1753; decided January 8, 1974). Standard No. 117 was published in its present form on March 23, 1972 (37 F.R. 5950) and amended January 31, 1973 (38 F.R. 2982), March 15, 1973 (38 F.R. 6999), April 19, 1973 (38 F.R. 9668), May 3, 1973 (38 F.R. 10940), and January 9, 1974 (39 F.R. 1443).

Standard No. 117 would have required, effective February 1, 1974, that each retreaded tire be permanently labeled with each of the following items of information: the tire's size designation; the tire's maximum permissible inflation pressure, either as it appears on the casing or as set forth in Table 1 of the standard; the tire's maximum load, either as it appears on the casing or as set forth in Table 1; the actual number of plies, ply rating, or both; the word "tubeless", if the tire is a tubeless tire, or the words "tube-type" if the tire is a tube-type tire; the words "bias-belted", or the actual number of plies in the sidewall and the actual number of plies in the tread area, if the tire is of bias/belted construction; and the word "radial" if the tire is of radial construction. The Court's opinion vacates those parts of the permanent labeling requirements dealing with tire size, maximum inflation pressure, ply rating, tubeless or tube-type, and bias/belted and radial construction. It states that the standard should contain requirements for permanent labeling of the maximum permissible load, the actual number of plies, and the composition of the material used in the ply of

the tire. This notice clarifies Standard No. 117 to require the maximum load to be permanently labeled onto each retreaded tire. As that requirement remains unchanged as a result of the Court's ruling, its effective date of February 1, 1974, is retained. Requirements for permanent labeling of the actual number of plies and the generic name of the cord material are not presently contained in the standard, and are accordingly proposed in a companion notice published on page 3571 of this issue of the Federal Register.

Under the language of Standard No. 117, the deletion of permanent labeling requirements results in a continuation of the existing requirement for affixed labeling in paragraph S6.3.1 with respect to the items of information deleted. Any information required to be labeled by paragraph S6.3.1 that is not permanently labeled onto the tire sidewall, i.e., either retained from the casing or relabeled on to the retreaded tire, must be included on a label, not easily removable, affixed to the tire sidewall.

In light of the above, paragraph S6.3.2 of 49 CFR 571.117 (Motor Vehicle Safety Standard No. 117) is revised. . . .

*Effective date:* February 1, 1974. This notice merely restates an effective date established January 31, 1973 (38 F.R. 2982).

(Sec. 103, 112, 113, 114, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421; delegation of authority at 49 CFR 1.51.)

Issued on January 24, 1974.

James B. Gregory  
Administrator

39 F.R. 3553  
January 28, 1974



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 117

### Retreaded Pneumatic Tires

(Docket No. 1-8; Notice 17)

This notice amends Motor Vehicle Safety Standard No. 117, *Retreaded Pneumatic Tires*, to require additional permanent labeling for retreaded tires. A notice of proposed rulemaking regarding this amendment was published January 28, 1974 (39 F.R. 3571).

The permanent labeling required to be on each retreaded tire by this notice is the actual number of plies in the tire's sidewall and the actual number of plies in its tread area (if different), and the generic name of each cord material used in the plies (both sidewall and tread area) of the tire. These requirements are in addition to the existing requirement that each retreaded tire be permanently labeled with its maximum permissible load.

Under the rule as hereby amended, retreaders do not have to relabel the ply and cord material information if it is retained on the casing sidewall through the retreading process. If the information is removed during processing, however, it must be relabeled so that it will be permanently affixed to the completed tire. If the information does not appear on the casing before retreading the casing may not be retreaded unless the retreader can otherwise determine the correct information.

The requirements for the permanent labeling of these information items are based specifically on section 201 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1421). The NHTSA did not include them in earlier versions of the standard, as it had concluded that their relationship to safety was not sufficient to justify permanent relabeling. In its opinion in *NTDRA v. Brinegar* 409 F.2d 31 (D.C. Cir., 1974), however, the Court of Appeals stated that under the Safety Act the NHTSA was unauthorized to

reach this conclusion, since Congress had determined that permanent labeling requirements for actual number of plies and cord material must be included in the standard. The proposal of January 28, 1974, was issued as a direct result of that opinion.

Many industry comments suggested that the NHTSA implement this aspect of the opinion by requiring the information to appear on completed retreaded tires only when the information was retained through the retreading process. In cases where the information could not be retained, one comment, from the National Tire Dealers and Retreader's Association (NTDRA), suggested the use of affixed paper or plastic labels to supply the information, so it could be available to the purchaser at the time of purchase. Most of the comments, however, suggested that when the information could not be retained, no requirement should be imposed. These comments argued that for the agency to require otherwise would present substantial burdens on retreaders because of the difficulties in labeling all of the possible combinations of ply and cord material. The industry comments further pointed out that the permanent labeling problem will eventually disappear because of the amendment to Standard No. 109, which requires all tires manufactured after July 1, 1973, to contain required labeling between the tire's maximum section width and bead. This labeling can be retained through the retreading process.

After careful consideration of the issues presented, the NHTSA has determined that it must issue the requirements in the form described. The agency is not unmindful that this will prevent the retreading of some casings otherwise usable, and will require relabeling of the infor-

mation on others. The NHTSA believes that to issue the requirements in the form suggested by the industry comments would not be consistent with the requirements of Section 201 of the Safety Act as interpreted by the Court of Appeals in *NTDRA v. Brinegar*. To follow the industry suggestions would leave some tires without the information permanently labeled. It is impossible to reconcile this result with the statutory requirement as interpreted by the Court. Nor can the agency, in conformity with the statute, establish an effective date so far in the future as to provide sufficient time for tires not containing necessary labeling to enter the retreading process.

Based on its review of the record, the NHTSA does not find the requirement unreasonable or impracticable. Since the opinion in *NTDRA v. Brinegar*, methods have been developed which allow for the permanent labeling or relabeling of retreaded tires using a rubber medallion which is cured to the sidewall of the tire when the tire is in the mold. The comments indicate that this method is presently being used to permanently label not only a tire's maximum permissible load, as required, but its size, ply rating, and whether it is tubeless or tube type as well. The technology for this labeling approach has been fully documented in retreading journals, and in communications to the docket. The NHTSA has furnished opinions stating that the use of the medallion conforms to the standard's permanent labeling requirements. The docket contains clear information regarding the cost of medallion labeling. Each label costs the retreader some 2.5 cents, and the record demonstrates that the cost of both label and application should not exceed 10 cents per tire. This differs from representations previously made regarding permanent labeling costs, which had been represented at \$2.50 per tire.

An additional problem raised in the comments is that adding the two information items greatly increases the labeling burden due to the number of possible combinations of information. The NHTSA does not believe the record supports this contention. According to NHTSA estimates, the variations in ply and cord material are relatively few in bias and bias-belted con-

structions, with only six possible combinations of ply and cord material in the case of bias tires and ten possible combinations in bias-belted construction. Together, these constructions would necessitate a maximum of 16 labels. While NHTSA estimates show a greater number of possible combinations in the case of radial tires, the record in this rulemaking suggests that few radial tires are as yet being retreaded. It appears most radials used for retreading will have been manufactured after July 1, 1973, and will have casings on which no relabeling would be needed.

Furthermore, one comment, which claimed an increase from 67 to 2,000 possible labels, presumed that all of the information (size, ply rating, maximum permissible inflation pressures, tubeless or tube type, as well as maximum permissible load, number of plies, and generic name of the cord materials) is placed on one label. However, there is nothing to prohibit the use of an additional label for both ply and cord material information, or even an additional label for each. Finally, relabeling is necessary only when the specified information is not retained through the retreading process. Estimates furnished by the industry and placed in the docket show that the information added by this amendment is not in a retainable position in only 1 out of 10 tires otherwise suitable for retreading. The requirement would presently affect a maximum of 10% of retreaded tires, and by the time of its effective date that percentage should decrease.

Prior to this amendment, Standard No. 117 required that on or after August 1, 1974, the only casings that could be used for retreading would be those that bore, originally molded into or onto their sidewalls, the symbol DOT, the tire size, and the actual number of plies or ply rating. The notice of proposed rulemaking of January 28, 1974, proposed to delete the ply-rating alternative, making it necessary to use only casings that show the actual number of plies. It also proposed to add a requirement that the casings to be used would be only those that had originally been labeled with the generic names of their cord materials. These casing requirements were proposed on the assumption

that the casing should already contain this information if it is to appear on the completed retreaded tire.

Several comments objected to these proposed requirements on the basis that they would cause a reduction in the number of retreadable casings in certain older and hard-to-find sizes. The NHTSA finds merit in these arguments, and the proposed requirements, that casings used for retreading must be only those that are originally labeled with their actual number of plies and their cord materials, are not adopted. Retreaded tires as they are finally produced must contain this information. But unlike "size" and "ply rating," which are crucial for safety and should only be based on original casing labeling, the NHTSA has decided that retreaders should be free to otherwise obtain information on the number of plies and cord materials and then place it permanently on the tire.

One objection raised in the comments with respect to the requirement that all casings bear the symbol DOT erroneously assumed that these requirements are part of the proposal. The requirement that on or after August 1, 1974, only DOT casings be retreaded was issued March 23, 1972 (37 F.R. 5950), because of the agency's concern over the continued use of older casings

which were not manufactured to meet Standard No. 109. It was based on industry comments that a 6-year supply of casings was required to meet industry needs. August 1, 1974, is 6 years from the date that all new tires were required to be labeled with the specified safety information which is the source of both affixed and permanent labeling under this standard.

The existing casing requirements therefore remain unchanged: the only casings that may be used for retreading are those that bear original permanent labeling of the DOT symbol, size, and the actual number of plies or ply rating.

In light of the above, section 571.117 of Title 49, Code of Federal Regulations (Motor Vehicle Safety Standard No. 117), is amended . . .

*Effective date:* May 12, 1975.

(Secs. 103, 112, 113, 114, 119, 201; Pub. L. 89-563; 80 Stat. 718 (15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421); delegation of authority at 49 CFR 1.51.)

Issued on November 6, 1974.

James B. Gregory  
Administrator

**39 F.R. 39882**  
**November 12, 1974**



## MOTOR VEHICLE SAFETY STANDARD NO. 117

### RETREADED PNEUMATIC TIRES

(Docket No. 1-8; Notice 7)

**S1. Scope.** This standard specifies performance, labeling, and certification requirements for retreaded pneumatic passenger car tires.

**S2. Purpose.** The purpose of this standard is to require retreaded pneumatic passenger car tires to meet safety criteria similar to those for new pneumatic passenger car tires.

**S3. Application.** This standard applies to retreaded pneumatic tires for use on passenger cars manufactured after 1948.

#### **S4. Definitions.**

**S4.1** "Casing" means a used tire to which additional tread may be attached for the purpose of retreading.

"Retreaded" means manufactured by a process in which a tread is attached to a casing.

**S4.2** All terms defined in § 571.109 and § 571.110 are used as defined therein.

#### **S5. Requirements.**

##### **S5.1 Retreaded tires.**

**S5.1.1** Except as specified in S5.1.3, each retreaded tire, when mounted on a test rim of the width specified for the tire's size designation in Appendix A of § 571.109, shall comply with the following requirements of § 571.109:

- (a) S4.1 (Size and construction).
- (b) S4.2.1 (General).
- (c) S4.2.2.3 (Tubeless tire resistance to bead unseating).
- (d) S4.2.2.4 (Tire strength).

**S5.1.2** [Except as specified in S5.1.3, each retreaded tire, when mounted on a test rim of the width specified for the tire's size designation in Appendix A of § 571.109, shall comply with the

requirements of S4.2.2.2 of § 571.109, except that the tire's section width shall not be more than 110 percent of the section width specified, and the tire's size factor shall be at least 97 percent of the size factor specified, in Appendix A of § 571.109 for the tire's size designation. (39 F.R. 1443—January 9, 1974. Effective 1/9/74)]

**S5.1.3** [Each retreaded tire shall be capable of meeting the requirements of S5.1.1 and S5.1.2 when mounted on any rim in accordance with those sections. (38 F.R. 2985—January 31, 1973. Effective: 6/1/73)]

**S5.1.4** No retreaded tire shall have a size designation, recommended maximum load rating, or maximum permissible inflation pressure that is greater than that originally specified on the casing pursuant to S4.3 of § 571.109, or specified for the casing in Table I.

##### **S5.2 Casings.**

**S5.2.1** No retreaded tire shall be manufactured with a casing—

(a) On which bead wire or cord fabric is exposed before processing.

(b) On which any cord fabric is exposed during processing, except that cord fabric that is located at a splice, i.e., where two or more segments of the same ply overlap, or cord fabric that is part of the belt material, may be exposed but shall not be penetrated or removed to any extent whatsoever.

**S5.2.2** No retreaded tire shall be manufactured with a casing—

(a) From which a belt or ply, or part thereof, is removed during processing; or

(b) On which a belt or ply, or part thereof, is added or replaced during processing.

**55.2.3** [Each retreaded tire shall be manufactured with a casing that bears, permanently molded at the time of its original manufacture into or onto the tire sidewall, each of the following:

- (a) The symbol DOT;
- (b) The size of the tire; and
- (c) The actual number of plies or ply rating. (39 F.R. 39882—November 12, 1974. Effective: 5/12/75)]

**55.2.4** [Reserved]

**56. Certification and labeling.**

**56.1** Except as specified in S6.2, each manufacturer of a retreaded tire shall certify that his product complies with this standard, pursuant to section 114 of the National Traffic and Motor Vehicle Safety Act of 1966, by labeling the tire with the symbol DOT in the location specified in § 574.5 of this chapter.

**56.2** [From June 1, 1973 to July 31, 1973, a manufacturer may certify compliance by affixing to the tread or sidewall of the tire, in such a manner that it is not easily removable, a label that states in letters not less than three thirty-seconds of an inch high: 38 F.R. 9668—April 19, 1973. Effective: 6/1/73)]

This retreaded tire was manufactured after June 1, 1973 and conforms to all applicable Federal motor vehicle safety standards.

**56.3 Labeling.**

**56.3.1** [Each retreaded pneumatic tire manufactured on or after June 1, 1973, shall be labeled, in at least one location on the tire sidewall in letters and numerals not less than 0.078 inches high, with the following information: (39 F.R. 1443—January 9, 1974. Effective: 1/9/74)]

- (a) The tire's size designation;
- (b) The tire's maximum permissible inflation pressure, either as it appears on the casing or as set forth in Table I;

(c) The tire's maximum load, either as it appears on the casing or as set forth in Table I;

(d) The actual number of plies, ply rating, or both;

(e) The word "tubeless" if the tire is a tubeless tire, or the words "tube type" if the tire is a tube-type tire;

(f) [If the tire is of bias/belted construction, the words "bias/belted", or the actual number of plies in the sidewall and the actual number of plies in the tread area. (39 F.R. 1443—January 9, 1974. Effective: 1/9/74)]

(g) The word "radial" if the tire is of radial construction.

[The information shall either be retained from the casing used in the manufacture of the tire, or may be labeled into or onto the tire during the retreading process, either permanently (through molding, branding, or other method that will produce a permanent label) or by the addition of a label that is not easily removable. (39 F.R. 1443—January 9, 1974. Effective: 1/9/74)]

**[56.3.2** Each retreaded tire manufactured on or after May 12, 1975, shall bear permanent labeling (through molding, branding, or other method that will produce a permanent label, or through the retention of original casing labeling) in at least one location on the tire sidewall, in letters and numbers not less than 0.078 inches high, consisting of the following information:

- (a) The tire's maximum permissible load,
- (b) The actual number of plies in the tire sidewall, and the actual number of plies in the tire tread area, if different; and
- (c) The generic name of each cord material used in the plies (both sidewall and tread area) of the tire. (39 F.R. 39882—November 12, 1974. Effective: 5/12/75)]

TABLE I—PLIES

Tire Size	2 Ply—4 Ply (4 Ply Rating)		4 Ply (6 Ply Rating)		4 Ply (8 Ply Rating)	
	Maximum Load	Maximum Inflation Pressure	Maximum Load	Maximum Inflation Pressure	Maximum Load	Maximum Inflation Pressure
6.00-13.....	1010	32	1080	36	1140	40
6.50-13.....	1150	32	1230	36	1300	40
7.00-13.....	1270	32	1360	36	1440	40
6.45-14.....	1120	32	1200	36	1270	40
6.95-14.....	1230	32	1310	36	1390	40
7.35-14.....	1360	32	1450	36	1540	40
7.75-14.....	1500	32	1600	36	1690	40
8.25-14.....	1620	32	1730	36	1830	40
8.55-14.....	1770	32	1890	36	2000	40
8.85-14.....	1860	32	1990	36	2100	40
5.60-15.....	970	32	1040	36	1105	40
5.90-15.....	1050	32	1130	36	1200	40
6.85-15.....	1230	32	1320	36	1390	40
7.35-15.....	1390	32	1480	36	1570	40
7.75-15.....	1490	32	1590	36	1690	40
8.85-15.....	1610	32	1720	36	1820	40
8.25-15.....	1620	32	1730	36	1830	40
8.45-15.....	1740	32	1860	36	1970	40
8.55-15.....	1770	32	1890	36	2000	40
8.85-15.....	1860	32	1980	36	2100	40
9.00-15.....	1900	32	2030	36	2150	40
9.15-15.....	1970	32	2100	36	2230	40
8.90-15.....	2210	32	2360	36	2500	40

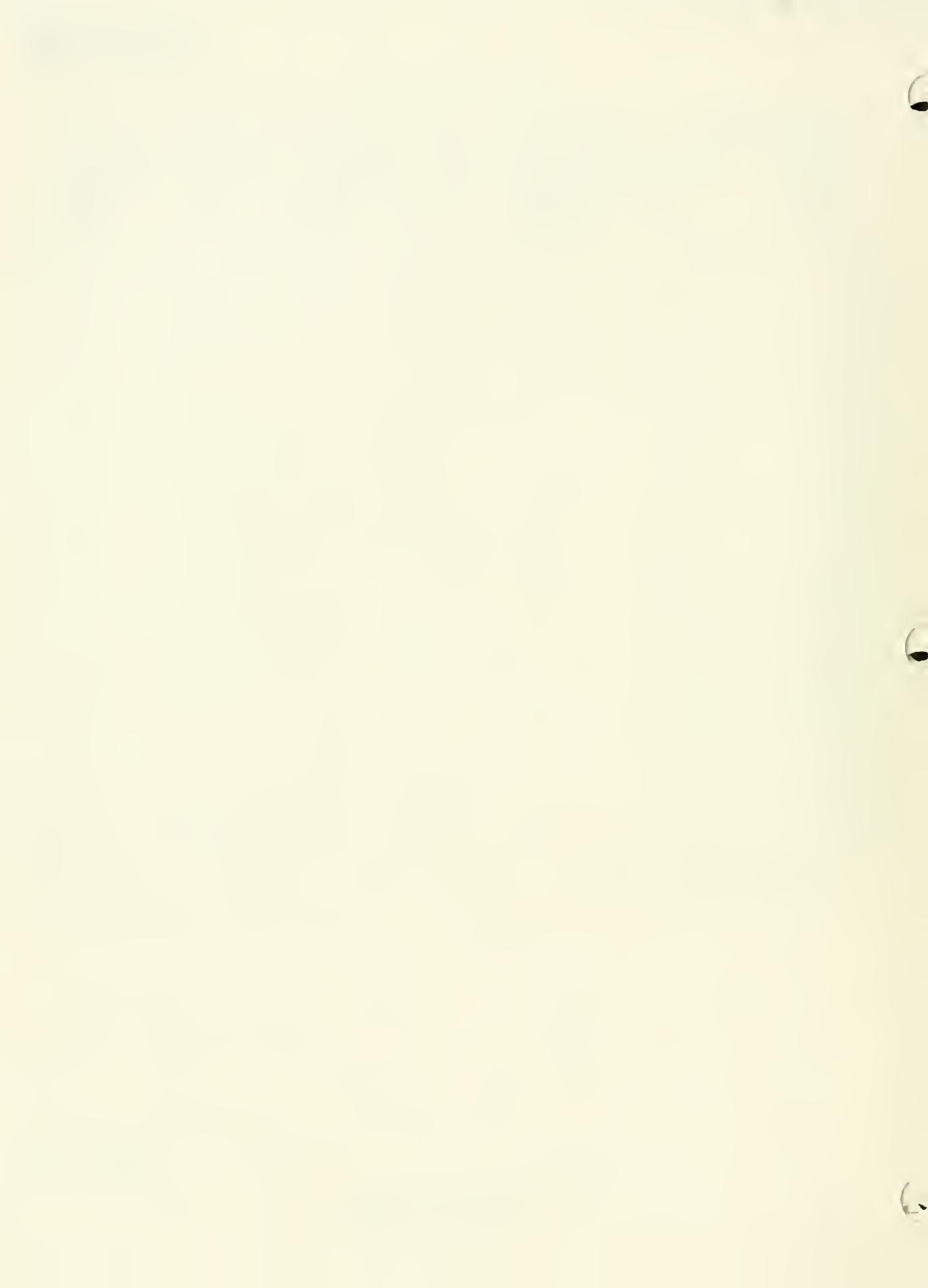
TABLE I—PLIES—Continued

Tire Size	2 Ply—4 Ply (4 Ply Rating)		4 Ply (6 Ply Rating)		4 Ply (8 Ply Rating)	
	Maximum Load	Maximum Inflation Pressure	Maximum Load	Maximum Inflation Pressure	Maximum Load	Maximum Inflation Pressure
A70-13.....	1060	32	1130	36	1200	40
D70-13.....	1320	32	1410	36	1490	40
D70-14.....	1320	32	1410	36	1490	40
E70-14.....	1400	32	1490	36	1580	40
F70-14.....	1500	32	1610	36	1700	40
G70-14.....	1620	32	1730	36	1830	40
H70-14.....	1770	32	1890	36	2010	40
J70-14.....	1860	32	1980	36	2100	40
L70-14.....	1970	32	2100	36	2230	40
C70-15.....	1230	32	1320	36	1390	40
D70-15.....	1320	32	1410	36	1490	40
E70-15.....	1400	32	1490	36	1580	40
F70-15.....	1500	32	1610	36	1700	40
G70-15.....	1620	32	1730	36	1830	40
H70-15.....	1770	32	1890	36	2010	40
J70-15.....	1860	32	1980	36	2100	40
K70-15.....	1900	32	2030	36	2150	40
L70-15.....	1970	32	2100	36	2230	40

TABLE I—PLIES—Continued

Tire Size	2 Ply—4 Ply (4 Ply Rating)		4 Ply (6 Ply Rating)		4 Ply (8 Ply Rating)	
	Maximum Load	Maximum Inflation Pressure	Maximum Load	Maximum Inflation Pressure	Maximum Load	Maximum Inflation Pressure
165-13.....	1050	32	1130	36	1200	40
175-13.....	1150	32	1240	36	1350	40
185-13.....	1270	32	1390	36	1510	40
155R13.....	950	32	1015	36	1075	40
155R14.....	1010	32	1080	36	1140	40
155R15.....	1015	32	1085	36	1150	40
165R13.....	1010	32	1080	36	1140	40
165R14.....	1120	32	1200	36	1270	40
165R15.....	1130	32	1200	36	1270	40
175R14.....	1230	32	1310	36	1390	40
185R14.....	1360	32	1450	36	1540	40
185/70R13.....	1090	32	1140	36	1190	40
145-14*.....	865	32	905	36	935	40
145-15.....	895	32	940	36	975	40
195-15.....	1550	32	1680	36	1820	40
205-15.....	1700	32	1840	36	2000	40

\*Dash Radial—Not an "R" Radial



## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 118

### Power-Operated Window Systems for Passenger Cars and Multipurpose Passenger Vehicles (Docket No. 69-11a)

In May 1968 the Director of the National Highway Safety Bureau issued a public advisory, stating that numerous cases of injury and death from accidental operation of power windows had been reported to the Bureau. He warned that many of those injuries and deaths had occurred because power windows could be closed when the ignition switch was off. In the advisory, the Director cautioned owners of vehicles with power-operated windows to have the wiring adjusted to prevent closure of the windows when the ignition switch is off.

It has been determined that the interests of motor vehicle safety require the imposition of a safety standard which will reduce, if not eliminate, the toll of deaths and injuries resulting from accidents involving power-operated windows.

A notice of proposed rule making relating to power-operated window systems in passenger cars and multipurpose passenger vehicles was published in the *Federal Register* on August 23, 1969 (34 F.R. 13608). Comments were requested concerning two objectives of the proposal: (1) To minimize the likelihood of personal injury or death occurring when a person is caught between a closing window and the frame, channel or seal, and (2) to insure that vehicle occupants can make emergency exits from vehicles equipped with power-operated windows in the event of a severe accident.

The comments received have been given careful consideration in the formulation of the safety standard issued today. To achieve the first major objective it was proposed that a power-operated window, once opened, not close when the ignition key of the vehicle is not in the "on" or "start" position. This proposal would have pro-

hibited operation of windows when the key was in the "accessory" position, a position provided to avoid battery discharge and possible damage to the electrical system. The proposal would also have prohibited activation of power tailgate windows from the exterior of the vehicle. Several commenters objected that the proposal would in these respects prohibit widely accepted convenience features without corresponding safety benefits. These comments have been determined to have merit, and the standard as presently issued has been modified to require that a power-operated window system not be operative, except by muscular force or by operating an outside lock, when the key is removed from the ignition lock or is in an off position. This permits operation of windows with the key in the "accessory" position, as well as by a key-locking system on the exterior of the vehicle.

To achieve the second objective, it was proposed that a control be required that would open power-operated windows from inside the passenger compartment of the vehicle, regardless of the key position. Allowance of such a control, however, might tend to defeat the first major objective, and also make it easier for thieves to enter a locked vehicle. Further, an accident severe enough to jam a vehicle door very likely would be severe enough to jam the window in its channel or to interfere with the power source for emergency operation of the window. For these reasons this proposal has not been adopted in Standard No. 118. The standard does, however, permit installation of master control switches for overriding control of power-operated windows when the ignition key is in a position other than off.

Comments indicated an assumption that power-operated interior partitions were covered, as they were intended to be, though not specifically mentioned in the preamble of the proposal. To insure that there is no ambiguity on the point, Standard No. 118 includes partitions in the requirements.

The subject matter covered by this rulemaking action is being adopted at this time because it has been determined that it is feasible and that it can be implemented at an early date. The notice of proposed rule making upon which this rulemaking action is based was issued in conjunction with an advance notice of proposed rule making (34 F.R. 13609, Aug. 23, 1969) on power-operated window systems that dealt with the subject of mechanisms that would interrupt, stop, or reverse the direction of the window when a predetermined force is exerted on an object between the glazing and the frame, channel, or

seal upon which it closes, and other fail-safe considerations. The advance notice involved engineering and economic problems of a substantial magnitude. Those problems and their solutions are undergoing further study and will be given consideration for rulemaking based on the results thereof.

In consideration of the foregoing, 49 CFR 571.21, Federal Motor Vehicle Safety Standards, is amended by adding Standard No. 118, Power-Operated Window Systems . . . .

Effective date: February 1, 1971.

Issued on July 17, 1970.

Douglas W. Toms,  
Director,  
National Highway Safety Bureau

35 F.R. 11797  
July 23, 1970

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 118

### Power-Operated Window Systems

(Docket No. 74-1; Notice 3)

The purpose of this notice is to amend Standard No. 118, *Power-Operated Window Systems*, 49 CFR 571.118, to permit the operation of power windows under certain conditions when the ignition is not in the "on" position.

On September 23, 1974, the agency published a notice (39 F.R. 34062) proposing to allow the operation of power windows, when the key that controls the vehicle's engine is in the off position or is removed from the lock, only in circumstances where (1) only muscular force is used, or (2) a key-locking system on the vehicle's exterior is activated, or (3) a door that has no frame meeting the upper edge of the closed window is opened a specified amount and a switch separate from the normal power window switch is activated.

Nine comments were submitted to the docket, all of which approved of the basic proposal to allow operation of the power windows when the vehicle engine is not running. General Motors, who suggested the proposal as it was published, supported its adoption. However, most of the commenters objected to the proposed provision that a separate switch be required to operate a window when the door is open to a degree sufficient to permit a ball the size of a child's head to pass between the top edge of the fully closed window and the vehicle's roof rail. The objection was based on a contention that the separate switch provision was design restrictive and not necessary from a safety standpoint. According to the comments, required use of a separate switch for activation of the windows when the doors are opened would not assure a higher level of safety than use of the normal power activation switch.

The NHTSA finds merit in commenters arguments. It is the considered opinion of the agency that the absence of a separate switch requirement will have no effect on the safety of the power-operated window system since no switch would be capable of activation unless the vehicle's door were opened to the specified distance. For this reason the proposed separate switch requirement is deleted. Manufacturers will thus be free to install whatever type of activation system they wish, as long as the criteria of S3(c) are satisfied.

In addition, the description of the locations between which the test ball must fit appears to need clarification. It is the agency's intention that the ball be capable of passing between the upper rear corner of the fully closed window and the vehicle's roof rail. Therefore, the term "trailing edge" in S3(c) is changed to "upper rear corner."

In consideration of the foregoing, S3. of Standard No. 118, *Power-Operated Window Systems* (49 CFR 571.118) is amended. . . .

*Effective date:* Because this amendment relieves a restriction and imposes no additional burden on any person, it is found for good cause shown that an immediate effective date is in the public interest.

(Sees. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued: July 23, 1975.

James B. Gregory  
Administrator

40 F.R. 31773  
July 29, 1975



## MOTOR VEHICLE SAFETY STANDARD NO. 118

### Power-Operated Window Systems

(Docket No. 69-11a)

**S1. Purpose and scope.** This standard specifies requirements for power-operated window and partition systems to minimize the likelihood of death or injury from their accidental operation.

**S2. Application.** This standard applies to passenger cars and multipurpose passenger vehicles.

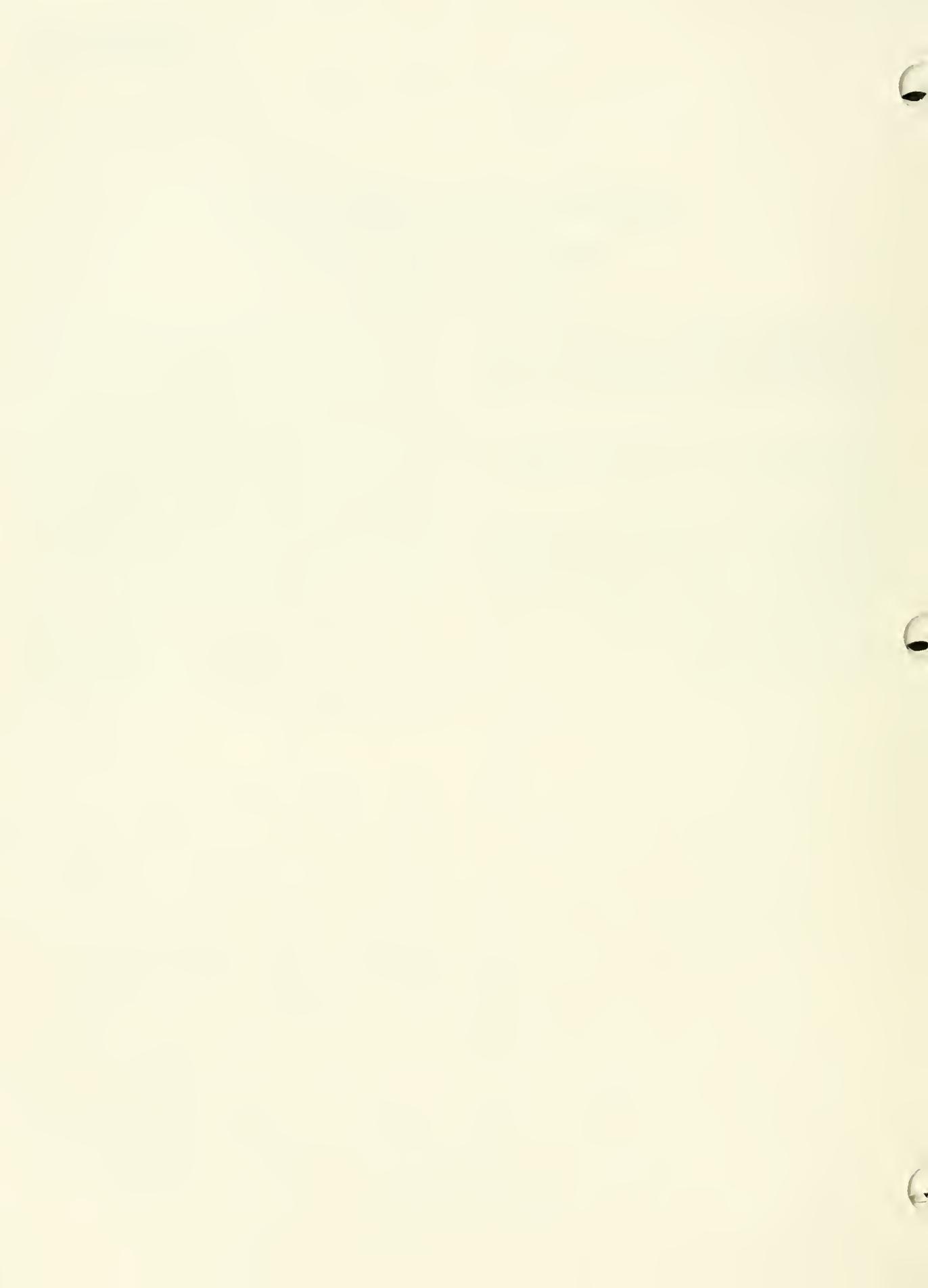
**S3. Requirements.** [When the key that controls activation of the vehicle's engine is in an off position or is removed from the lock, no power-operated window or partition shall be movable except—

(a) By muscular force unassisted by a power source within the vehicle;

(b) Upon activation by a key-locking system on the exterior of the vehicle; or

(c) In the case of a door that does not have a frame that meets the upper edge of the window in its closed position, by activation of a switch that is energized only when the door is opened wide enough to permit a ball 8 inches in diameter to pass between the upper rear corner of the window in its fully raised position and the vehicle's roof rail. (40 F.R. 31773—July 29, 1975. Effective: July 29, 1975.)]

**35 F.R. 11797  
July 23, 1970**



## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 119

### New Pneumatic Tires for Vehicles Other Than Passenger Cars

(Docket No. 71-18; Notice 3)

This notice establishes a new Motor vehicle safety standard No. 119 *New pneumatic tires for vehicles other than passenger cars*, 49 CFR 571.119, which specifies performance and labeling requirements for new pneumatic tires designed for highway use on multipurpose passenger vehicles, trucks, buses, trailers and motorcycles manufactured after 1948, and which requires treadwear indicators in tires, and rim matching information concerning those tires.

Notices of proposed rulemaking on this subject were published on August 5, 1971 (36 F.R. 14392), and July 8, 1972 (37 F.R. 13481).

The July 1972 notice proposed that, instead of including the voluminous "tire tables" of tire size designations, maximum loads and inflation pressures, and dimensions in the standard, the manufacturers continue as at present to use the industry association tire and rim manuals for the purpose of product standardization. Since the only tire characteristics relevant to the safety performance tests of the standard are general tire type, speed restrictions, maximum load rating, load range, and rim diameter, all of which are readily available or labeled on the tire itself, the tables are not necessary for the performance requirements. To prevent these private associations from having ultimate regulatory power over individual manufacturers, a provision was included in the proposal by which a manufacturer who wished to differ from the values in the association tables could do so by providing separate information to the NHTSA, to his dealers, and to the public upon request. To prevent the under-rating of tires of an established size designation, another provision would prohibit the assignment by a manufacturer of a maximum load rating to a particular tire size designation

that is lower than the load rating already published elsewhere for that tire size designation.

Many domestic tire manufacturers objected to lack of tire tables on the grounds that it in effect endorsed non-standardization of tire specifications. They and some representatives of the trucking industry speculated that there might be danger of mis-match arising from the production of tires whose dimensions deviate substantially from the published dimensional specifications for tires of that size designation. Several of the domestic manufacturers recommended inclusion of the (American) Tire and Rim Association tables in the standard because of the experience that domestic manufacturers have with road conditions in the United States.

Other manufacturers, however, supported the deletion of tire tables for several reasons. They argued that a single standard would discourage innovation in tire design and suggested that the complexities of selection and maintenance of truck tires could not be reduced to a single table of values. They asserted that standardized new-tire dimensions do not eliminate the need to measure tires for proper dual matching, because tires wear differently in use and thereafter rarely match new or used tires of the same size.

Upon consideration of all relevant information, the NHTSA has concluded that the position taken in the proposal is sound, and it is adopted in the rule. The inclusion in the Code of Federal Regulations of load-inflation and dimension tables for every road tire sold in this country (they presently are included in Standard 109 only for passenger cars) would be a vastly cumbersome process, not only in its inception but as a continuous maintenance task. The NHTSA finds no justification at this time for undertaking

to monitor substantively the manufacturer processes and testing that lead to the continual changes in the standard association tables, so its function in this regard would be largely clerical. The point is not, as the (U.S.) Rubber Manufacturers Association asserted, primarily one of "administrative convenience". It is that no justification has been found for locking both the government and the world tire industry into a restrictive and unwieldy system by which the Code of Federal Regulations is formally amended every time a manufacturer decides to add a tire size, or change the load rating or dimensional specifications of one of its tires. There are many reasons to avoid over-regulation; "administrative convenience" is among the least of them.

This agency has no intent to dilute the standardizing function of the trade-association table systems that presently are used to provide necessary tire and rim information to dealers and users. These systems monitor the safety aspects of tire dimension and load rating satisfactorily now without government regulation, and the NHTSA expects that they will continue to do so. No evidence has been presented of under- or over-sizing of tires that would warrant the institution of a massive government regulatory program in that area. If such a practice should arise in the future to a degree that constitutes a public hazard, the NHTSA has ample authority to deal with it specifically, as a safety-related defect, and prospectively, under its rulemaking powers.

The argument that the agency should include only the domestic Tire and Rim Association tables, thereby requiring foreign tire manufacturers to build tires under the specifications, and presumably the approval, of the domestic association, is found to be without merit. The wording and the legislative history of the National Traffic and Motor Vehicle Safety Act show a clear Congressional intent to give evenhanded treatment to domestic and foreign manufacturers of motor vehicles and equipment, and this has always been the policy of the NHTSA. This agency has no evidence that foreign associations or manufacturers lack the information necessary to produce safe tires for the American market.

Finally, the argument that the agency could or should by some means prevent "proliferation" of new tire sizes is without substance. No concrete justification has been presented for attempting to limit the introduction of new tire sizes, and to date no significant safety problems have been found caused by the addition of new tire sizes. The NHTSA assumes that the competition and consumer demand forces of the private sector will operate as in other areas of our economy, to produce a satisfactory product population.

The criteria for tire failure in the endurance and high speed laboratory tests have been substantially modified from those of the proposal in response to comments to this docket and Docket 71-10, Notice 2 (37 F.R. 19381, September 20, 1972), which proposed identical changes in the passenger car tire failure criteria. This regulation adopts the same failure criteria as were adopted in final form for passenger car tire tests on September 28, 1973 (38 F.R. 27050), and relies on several new and revised definitions found in Standard 109. The preamble to the passenger car tire amendment fully explains the modifications made, and it is only noted here that the changes are substantially in agreement with manufacturers' requests to specify the tire failures with particularity. A pre-test inspection has been added to discover failures in construction evident without dynamic testing. Additionally the required air pressure following the test run has been raised to 100 percent of the original pressure.

Several comments questioned the inclusion of all non-passenger car tires in one standard, pointing out that tire design differs radically to optimize desirable characteristics for each vehicle type and application. However, this standard does not attempt to measure the optimum characteristics of each type of non-passenger tire. This standard only establishes minimum performance characteristics which any type of tire must satisfy to be safely used on public highways. Passenger car tires have been subjected to such a standard in the past and this proposal extends a comparable minimum standard to all other tire types designed for highway use. The requirements recognize the design differences

between tire types by establishing different test values for different tire types, size, construction, load ranges, and speed restrictions.

Comments to the docket requested physical tolerances and related accommodations for test purposes. These arise from misunderstanding of the legal nature of the safety standards, which are performance levels that each vehicle or item of motor vehicle equipment must meet, and not instructions for manufacturer testing. The temperature conditions for tire testing have been reworded to reflect the legal meaning and the NHTSA testing practices relative to tire standards. The proposed standard would make clear that the tire must be capable of meeting the requirements when tested at any ambient temperature up to 100° F. The legal significance of this requirement is explained in a general provision of Part 571, § 571.4, *Explanation of usage*. In NHTSA compliance testing, the ambient temperature would be maintained in a range between 90° and 100° F., and any test failure under those conditions would be considered a failure to meet the standard. Manufacturer testing should be directed at proving the tire's capability in the exercise of due care, by testing under conditions at least as adverse as any that could be established in accordance with these procedures.

The trucking industry questioned the advisability of labeling maximum inflation and load rating on the tire because it appeared to prohibit the adjustment of pressures to road conditions. The purpose of the labeling is to establish test values for the tire and to warn the user of the tire's maximum capabilities. The label does not prohibit adjustment of pressure to suit road conditions or prevent a manufacturer from recommending other inflation-load combinations on the tire or in accompanying literature to suit specific circumstances.

European manufacturers objected to the requirement that load rating be indicated by a "load range" index not in world-wide use. The primary purpose of the load range index is to indicate categories of strength within the size designations, for user information and test purposes. It should be understood that a manufacturer may use whatever additional systems he chooses to indicate his assessment of tire

strength. Information such as metric equivalents and ply ratings, for example, may be added to sidewall labeling as long as the required information appears in the required format on the tire.

Several manufacturers suggested that labeling appear on only one side of a tire when both sides of the tire, as mounted, will be available for inspection. Accordingly, motorcycle tires must now be labeled on one side only, but the inaccessibility of both sidewalls on truck and bus tires for visual inspection precludes one-sidewall labeling of these categories.

Despite this inaccessibility, however, the identification code appears on one sidewall only, because placing the ID slug in the upper half of a hot process mold is a difficult and dangerous operation. In response to another labeling request, the DOT symbol must not be placed on the tire before the effective date of the standard.

Several manufacturers argued for greater design freedom in the placement of treadwear indicators because the proposed locations could generate useless, arbitrary information when applied to "lug" tread designs. In response, tread "groove", "width", and "depth" have been defined so that the treadwear indicators are placed to indicate wear in that portion of the tread which contacts the ground.

Several comments on the endurance requirement requested lower test loads and speed to approximate actual driving conditions on flat surfaces. The NHTSA does not utilize the laboratory test wheel to simply approximate road conditions but rather to apply strictly controlled amounts of stress to moving tires over long periods in order to measure a minimum level of performance. Industry testing established these values and they have been independently verified in NHTSA's Safety Systems Laboratory as an accurate gauge of tire endurance. Another manufacturer expressed confusion about the appropriate endurance test standards for mining and logging tires. These tires are generally speed-restricted tires and should be tested in accordance with the values established in Table III for all other speed-restricted tires.

In response to another comment, it should be noted that test accuracy also requires a stand-

ardized test wheel diameter, because the wheel's curvature directly affects a tire's ability to absorb strain.

Several manufacturers requested elimination of the pressure reading following the 47-hour run so that they could run the tire to destruction in accordance with industry test practices without stopping to make the measurement. This request can not be granted because the new procedures for evaluating tire failure necessitate stopping after the run to inspect the tire, in addition to stopping to take a pressure reading.

Comments raised the validity of the strength test when applied to tires incorporating recent innovations in tire design. It appears that recent changes in the construction of passenger car tires, especially the addition of belts under the tread, have tended to make the strength test specified in Standard 109 obsolete (38 F.R. 1055, January 8, 1973). However, the construction of non-passenger tires permits accurate measurement of tire strength without the "bottoming out" problem noted in the comments, if the proper plunger size and breaking energy value are used. A differential in breaking energy value between tubed and tubeless tires accommodates the smaller dimensions of the newer tubeless configurations that replace tube tires of the same load range. The "light truck" category accommodates the different design and construction materials which manufacturers use in these tires designated for this specialized service. The NHTSA does not agree that lower breaking energy values should apply to tires under 7 inches in section width as suggested in one comment, because these tires are no smaller than typical passenger car tires subjected to similar testing and similar conditions on the highway. In response to another comment, the NHTSA has concluded that differences in the construction of steel-belted tires are not sufficient to justify lower energy values in the plunger test similar to those extended to rayon tires.

Objections to the high speed performance requirements questioned the testing of all light tires (load ranges A, B, C, and D) under the same high-speed conditions. The NHTSA has

eliminated speed-restricted tires from the requirements but will maintain high-speed requirements for all motorcycle, trailer, and truck tires. While it is true that these tires are specially constructed for their purpose and often are mounted on vehicles marked with speed restrictions, there is no assurance that these tires will be properly utilized. The difficulty lies with drivers who ignore rental trailer speed limits, subject boat or mobile home trailer tires to higher than recommended speeds, attempt to improve the performance of their low speed motorcycles, or drive trucks equipped with light truck tires at high speed on the highway. This probability of abuse creates a safety problem which can be met by requiring these tires to withstand such high speed abuse. Load range D tires over 15 inches in section width are presently subject to the high speed test but may be reclassified on the basis of future test experience.

Comments to the docket objected to the proposed effective date and requested up to 18 months leadtime following issuance of the standard on the grounds that the large variety of tires to be certified requires substantial enlargement of test facilities. This standard has been in various proposal stages for 4 years, however, which has provided the tire industry ample opportunity to make plans for the acquisition and installation of test facilities and therefore leadtime of 9 months is considered adequate.

In consideration of the foregoing, a new Standard 119, *New pneumatic tires for vehicles other than passenger cars*, is added to Part 571 of Title 49, Code of Federal Regulations, to read as set forth below.

Effective date: September 1, 1974.

(Secs. 103, 112, 113, 114, 119, 201, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421; delegation of authority at 49 CFR 1.51.)

Issued on November 5, 1973.

James B. Gregory  
Administrator

**38 F.R. 31299**  
**November 13, 1973**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 119****New Pneumatic Tires for Vehicles Other than Passenger Cars****(Docket 71-18; Notice 5)**

This notice amends Standard 119, *New pneumatic tires for vehicles other than passenger cars*, 49 CFR 571.119, by changing the effective date from September 1, 1974, to March 1, 1975.

A major concern of manufacturers commenting on Standard 119 as it was published in final form on November 13, 1973, (38 F.R. 31299), with a September 1, 1974, effective date, was the limited leadtime in which to modify tire molds and certify the conformity of tires. Correct use of the DOT symbol, lettering height, and clarification of treadwear indicator language required attention before the changeover process could begin.

Manufacturers requested up to 11 months' additional leadtime in view of these difficulties. Amendments have been proposed that would resolve these specific problems. Because the range of non-passenger car tires is so great, however, the National Highway Traffic Safety Administration has determined that even with these changes an additional 6 months' leadtime is justified to accomplish full certification.

Other matters raised by petitions for reconsideration are presently under consideration and will be answered in accordance with the procedures of 49 CFR 553.35, *Petitions for reconsideration*.

In consideration of the foregoing, Standard 119 (49 CFR § 571.119) is amended by changing the effective date of September 1, 1974, to March 1, 1975.

Because this amendment creates no additional burden, and because changeover scheduling must begin immediately, it is found for good cause shown that notice and public procedure thereon are impracticable and unnecessary.

(Secs. 103, 119, 201, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407, 1421; delegation of authority at 49 CFR 1.51.)

Issued on January 29, 1974.

James B. Gregory  
Administrator

**39 F.R. 4087**  
**February 1, 1974**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 119

### New Pneumatic Tires for Vehicles Other than Passenger Cars

(Docket 71-18; Notice 6)

This notice responds to petitions for reconsideration on Standard 119, *New pneumatic tires for vehicles other than passenger cars*, 49 CFR 571.119, published November 13, 1973 (38 F.R. 31299). In response to comments by twelve tire manufacturers and trade associations, the definitions, labeling, and performance provisions of the standard are amended in several respects.

#### *Justification for Issuance of Standard 119*

The Rubber Manufacturers Association (RMA), supported by most domestic tire manufacturers, petitioned for withdrawal of Standard 119 on the grounds that promulgation of the standard did not satisfy the criteria for the establishment of Motor Vehicle Safety Standards set out in § 103 of the National Traffic and Motor Vehicle Safety Act of 1966. Section 103(f) of the Act requires that the formulation of a standard include consideration of its appropriateness for particular items of motor vehicle equipment, relevant safety data, and the extent to which it will contribute to carrying out the purposes of the Act. As formulated a standard must be practicable, meet the need for motor vehicle safety, and be stated in objective terms.

In petitioning for withdrawal of Standard 119 for failure to "meet the need for motor vehicle safety," the RMA and those tire manufacturers who support its position effectively assert that no tire safety hazard exists which can be met by Standard 119. The National Highway Traffic Safety Administration (NHTSA) does not agree.

Congress recognized a tire safety problem. The Senate held hearings on and considered a bill devoted totally to tire safety (S1643). The House included a separate title in H.R. 13228 to emphasize tire safety as a particularly important area for the issuance of safety standards.

In a number of bills which have been introduced in both Houses as well as in a bill which has passed the Senate (S.2669) the necessity for standards for tires was considered as an independent problem and without reference to its relationship to the total traffic safety problem. S.2669 is confined only to the improvement of tires for passenger cars and station wagons. The committee decided that although *tires are a highly important part of the total traffic safety problem* they are, nevertheless, an integral part of it and should be dealt with in the context of the problem and not in a piecemeal fashion. . . .

However the committee did feel that it was necessary to emphasize this aspect of the safety problem and to establish certain specific requirements which should be contained in the Secretary's standards on tires. (emphasis supplied) H.R. Rep. No. 1776, 89th Cong., 2d Sess. 32 (1966).

On the House floor, Representative Springer detailed the effect of the legislation on motor vehicle equipment.

Obviously, the most important piece of equipment which comes to mind is the tire. The other body treated this subject in separate legislation, but it seems to me, and it did to our committee, that tire standards must be part and parcel of any legislation which seeks to impose standards of safety for the cars on the highway. Consequently, a portion of the bill was devoted specifically to this subject. It requires minimum standards for all tires, and then sees to it that the buyer will have all the information he needs to make a decision as to the tire he needs.

112 Cong. Rec. 18,780 (daily ed. Aug. 17, 1966)

Congress showed particular interest in passenger car tires, but did not limit the legislation to them, as suggested by Firestone in its petition for reconsideration. As the House report notes, Title II represents a broadening of the tire safety issue from passenger cars and station wagons. The language of Title II refers to tires of "each motor vehicle" and to a uniform tire quality grading system "for motor vehicles." Section 204 is devoted to regrooved tires which are commonly utilized on non-passenger cars.

The NHTSA has concluded that the tire safety problems recognized by Congress can best be met by Standard 119. The standard requires labeling and tire-rim matching information to aid proper application of the tire, and minimum performance levels to ensure adequate designed-in safety for normal use and predictable abuse on the road. The standard is directed at misuse of tires as well as their correct use.

It is true that Bureau of Motor Carrier Safety statistics indicate that professional maintenance, cost consciousness, and frequent state inspections result in a lower than normal number of tire failures on interstate haulers. These figures, however, are not representative of tire conditions throughout the multipurpose passenger vehicle (MPV), truck, bus, motorcycle, and trailer categories. Congress mandated minimum tire safety standards although it was aware that tire failure statistics were difficult to isolate, realizing that tire design, while not a major cause of failures in well-maintained tires, could offer a margin of safety where tires are misused. Hearings on S.1634 Before the Senate Commerce Committee on Tire Safety, 89th Cong., 1st Sess., ser. 89-37 at 41 (1965); Hearings on S.3005 Before Senate Commerce Committee on Traffic Safety, 89th Cong., 2nd Sess., ser. 89-49 at 158, 159 (1966). In its formulation of the standard, the NHTSA considered data which showed that worn and misapplied tires create a significant safety hazard. Standard 119 ensures that the information required by Congress to be on tires, along with additional tire-rim matching information and treadwear indicators, are available to the unknowledgeable individual who must select,

maintain, and replace non-passenger tires periodically. The RMA itself argued for the inclusion of load-rating information in this standard as an effective means to eliminate the dangers of proliferation and misapplication of tire sizes. In the area of tire design, the minimum performance levels in Standard 119 ensure a margin of safety for persons who may misapply or abuse tires despite the label information and treadwear warnings.

The NHTSA experience with performance standards for passenger car tires also supports Standard 119 rulemaking. Since the beginning of certification testing by the manufacturers and compliance testing by the NHTSA, the percentage of test failures has dropped from approximately 5.6% to less than 1%. At the same time 88 recalls of 1,436,118 tires have removed from the road substantial numbers of tires which could not be shown in the exercise of due care to be able to meet the minimum requirements. Standard 119 has similar performance tests, calculated to produce close surveillance of test failure percentages and recalls when a faulty tire design is identified. The performance test levels vary according to tire type to ensure that the standard is reasonable, practicable, and appropriate for the particular tire design in its intended service application.

The NHTSA has found that Standard 119 will weed out faulty tire design and promote safety. The test values of Standard 119 were originally proposed by industry and checked by the NHTSA at its Safety Systems Laboratory. The RMA conducted a similar series of tests at that time and later endorsed the requirements as modified in minor respects:

The laboratory tests and values in the proposed FMVSS 119 as amended by our comments would set standards of performance that would enable the industry to design tires that would ensure safe operation on the highways. Comment #4 to Docket 1-5, Notice 7 (p 6).

By reference to *H & H Tire Company v. United States Department of Transportation*, 471 F2d 350 (7th Cir 1972), the RMA and Firestone raised the issue of Standard 119's prac-

ticability. This requirement, at § 103(a) of the Act, was interpreted in *H&H* to mean that the NHTSA must determine the technological and economic consequences of the standard on the regulated industry. In that case the Court determined that the retread tire industry could be destroyed by the expense of major product redesign or the loss of business which could result from passing on these costs in higher prices to the typical retread consumer. The Court also pointed out that the retread consumer might use older worn tires longer than previously and thereby in effect increase the tire hazard problem in response to Standard 117.

In contrast, the NHTSA has determined that compliance with Standard 119 does not require significant or impracticable technological change. Tests run at the Safety Systems Laboratory indicate that a sampling of production-run tires can meet the required performance levels, as they are now constructed. An analysis of benefits and costs demonstrates that the costs of additional testing are less than the estimated savings in property and lives. Finally, the consumer of new tires is less likely than the retread consumer to shift his tire purchase habits and has less opportunity to do so. The NHTSA has carefully determined the technological and economic impact of Standard 119 on the new tire industry and found it to be practicable.

The NHTSA totally disagrees with the RMA and Firestone in their final argument that safety-related defect notification offers adequate protection to consumers without the addition of a safety standard. Firestone inaccurately equates the effect of a standard with that of a notification campaign, claiming that in either case a manufacturer must recall tires containing defects or face civil penalties. Issuance of a standard imposes significantly greater responsibility on a manufacturer to assure himself in the exercise of due care that his product is safe before it is sold and subsequent use reveals a safety-related defect.

#### *Technical Consideration of Standard 119*

The Application section (S3.) raised several questions about the standard's relationship to Standard 109-type tires, experimental tires, and low speed and off-road vehicle tires. The stand-

ard applies to new tires designed for highway use on non-passenger-car motor vehicles. The present language makes clear that tires which do not meet these criteria are not subject to the standard, including those tires subject to Standard 109. The tire manufacturer himself must determine whether his tires, restricted or not to speeds under 35 mi/h, or used on slow-moving vehicles on or off the highway, were designed by him for highway use. As an example, Dunlop cited moto-cross tires which use the public highway "during the course of competitions." Without evidence to the contrary, however, the NHTSA assumes that these tires are used to get to and from the competition over the public highways. In answer to a related request for interpretation by Bridgestone, it is the designed and intended use of the tire (as realistically anticipated by the manufacturer) that matters, not a simple marking such as "Not For Highway Use" on the tire sidewall. In the case of "experimental" or "survey" tires the tires are designed for highway test purposes and are subject to the standard.

The definition of light truck tire has been revised in response to comments from the RMA and the Japan Automobile Tire Manufacturers Association. They cited a number of light truck tires which may or may not share a common size designation or dimensions with passenger tires, but still require special test values because of their heavy-service construction.

Standard 119 does not include the voluminous "tire tables" of tire size designation, maximum loads and inflation pressures, and dimensions requested by the domestic tire industry. An explanation of this approach accompanied issuance of the rule (38 F.R. 31299, November 13, 1973). While the RMA and Goodyear have restated their earlier position that product standardization can only be assured by Government publication of industry association tables, they did not respond to the extensive justification made with the rule. The NHTSA concludes that its determination is sound.

Nearly all tire manufacturers commented on Standard 119's labeling provisions and the amount of leadtime necessary to implement them. To resolve the most pressing problems, the NHTSA has already issued notices that postpone

the effective date of the standard 6 months and propose a lettering size and depth, use of the DOT symbol prior to the standard's effective date, and clarification of the treadwear indicator requirement. (39 F.R. 4087, February 1, 1974, 39 F.R. 3967, January 31, 1974). All other petitions which concern the labeling provisions are treated in this response.

The RMA and the European Tyre and Rim Technical Organization (ETRTO) requested changes in paragraph S6.5(d) ("Tire marking"), several of which are adopted in this amendment. The word "corresponding" is inserted before "inflation pressure" to accommodate tires whose maximum load rating is not at maximum inflation. Punctuation is removed from the legend that appears on the tire to simplify stamping. The example is revised to make clear that "TIRE RATED FOR SINGLE AND DUAL LOAD" and "TIRE RATED ONLY FOR SINGLE LOAD" do not appear on the tire sidewall. ETRTO suggested that a title appear on the tire to qualify the information provided, but the NHTSA has concluded that the information alone is more helpful to the unknowledgeable user, and that a knowledgeable user would refer to the tire tables for exact information before changing tire inflation pressure.

Paragraph S6.5(e) on speed restricted tires has been clarified to limit the requirement to tires restricted to 55 mi/h or less. S6.5(f) remains unchanged, because the National Traffic and Motor Vehicle Safety Act of 1966 requires that the actual number of plies and ply composition appear on the tire sidewall. The words "tube type" appear on tires under S6.5(g) because many consumers are unaware of the significant distinctions between tube type and tubeless tires. Dunlop's request that treadwear indicators be required on tires that are regrooved is beyond the authority under which Standard 119, applying only to new tires, was issued.

Paragraph S6.5(j) calls for a single letter to appear on the tire to indicate categories of strength within the size designation, for user information and test purposes. As the ETRTO pointed out, a requirement for any additional wording such as "load range" could confuse international standardization efforts. Manufactur-

ers are, of course, entitled to add labeling information as long as the required information appears in the required format on the tire.

The maximum load rating provision in S6.6 requires tires of a particular size to have a maximum load rating at least as great as the lowest rating published for that size. In this way the publications do not mislead a consumer who assumes that a particular tire size must have only the load ratings listed. The RMA advocated that more particular load rating information be supplied to aid in actual tire selection. Reference to any factors other than tire size, however, would detract from the desired concept that, for one tire size, there is one lowest maximum load rating, and that load rating is published.

Two substantial requests were raised with regard to the endurance requirement. Uniroyal petitioned for a reduction in the duration of the three test phases to 4 hours each. The NHTSA is considering that submission but must deny action on it at this time because an independent evaluation of the procedures has not yet been conducted, and because there has not been notice or opportunity to comment on the proposal by all interested persons.

The RMA petitioned for 34-hour endurance testing of all tires subject to the high speed test (S6.3) on the grounds that the 47-hour speed/endurance test would be redundant. The NHTSA agrees and has revised Table III accordingly.

The ETRTO proposed new test values for some motorcycle tires, but the request was unclear as to the meaning of the 62 mi/h criterion and the unsupported request cannot be granted. If, in the future, the ETRTO petitions for rule-making to revise the table, an explanation of the criterion and a justification for the test values would permit an informed decision.

Comments to the strength test questioned plunger size and energy values, the computation procedures, and the appropriateness of the test to mobile home, special trailer, wide base, and radial tires.

The RMA argued that the limited service of most mobile home and special trailer tires could not justify the increased cost necessary to upgrade the strength of the tires to meet the requirement. The NHTSA has consistently treated

mobile homes and other trailers as full-fledged motor vehicles and applied applicable standards rigorously to reduce the number of crashes in which mobile homes are involved, as indicated by BMCS statistics. The RMA request is denied to ensure that equally-rated tires on towed and towing vehicles will, in fact, meet equal minimum strength requirements.

The RMA and ETRTO generally advocated larger plungers or reduced energy values for tires and the ETRTO petitioned for the exclusion of radial tires from the strength test. The NHTSA has determined that the established values and plunger sizes, drawn from industry experience, adequately measure tire strength. Any future petitions for rulemaking to change these values should be accompanied by detailed supporting data, as was submitted by Uniroyal in its petition for reconsideration.

Comments again requested that a plunger which contacts the rim be considered to have established an energy value which meets the strength requirement. The NHTSA reiterates its position that the standard's present energy values measure the strength of a well-constructed non-passenger car tire before the tire breaks or the plunger contacts the rim. Specific test values may be revised based on future test experience, but revision of the calculation procedures used for all tires is not justified. The request for three plunger applications in the case of 12-in. or smaller diameter tires has been granted.

Michelin and the ETRTO have inquired as to the NHTSA's position with regard to tubeless tires above load range J. Such tires, when marketed in the United States, are subject to this standard, and the NHTSA would like the benefit of detailed description of, and test experience with, these tires before it establishes test requirements. It is requested that support for ETRTO or Michelin values be submitted to the NHTSA Tire Division.

The high speed performance requirement was adopted to test different tire characteristics from those tested under the endurance performance requirement. The test is run only on non-speed-restricted tires in the lighter load ranges because,

for tires of heavier construction, the endurance test alone develops temperatures which evaluate all the characteristics satisfactorily. The RMA and several manufacturers have pointed out that the endurance test can serve this purpose for large tires even in the lighter ranges, and the NHTSA, therefore, restricts the high speed requirements to motorcycle tires and to non-speed-restricted tires of 14.5-in nominal rim diameter or less marked Load Range A, B, C, or D. Light truck tires and other tires which are 14.5-in and smaller remain subject to the high speed requirements because the NHTSA has determined that the high speed test measures different values than the endurance test in these smaller sizes.

The definition of tire failure is closely related to the endurance and high speed performance tests. The RMA and several tire manufacturers requested re-definitions of several terms and revision of the tire cooling procedures related to tire failure. The NHTSA has established Docket 71-10, *New pneumatic tires, revised performance requirements*, to treat the re-definition of tire failure, and will respond to these issues in a notice to that docket.

Interested persons should remember that, in addition to the amendments set forth below, the NHTSA has already amended the effective date of the Standard to March 1, 1975, and has proposed amendments to the lettering, DOT certification, and treadwear provisions which will be acted on when comments have been considered.

In consideration of the foregoing, amendments are made to Parts 571 and 574 of Title 49, Code of Federal Regulations. . . .

*Effective date:* March 1, 1975.

(Secs. 103, 112, 113, 114, 119, 201, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1403, 1407, 1421; delegation of authority at 49 CFR 1.51.)

Issued on February 7, 1974.

James B. Gregory  
Administrator

39 F.R. 5190  
February 11, 1974



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 119

### New Pneumatic Tires for Vehicles Other Than Passenger Cars

(Docket No. 71-18; Notice 7)

This notice amends Standard No. 119, *New pneumatic tires for vehicles other than passenger cars*, 49 CFR 571.119, to specify lettering sizes and modified treadwear indicator requirements for tires. In addition, it amends Part 574, *Tire Identification*, 49 CFR 574, to permit the labeling of certain tires with the symbol DOT prior to the effective date of the standard. This notice also responds to petitions for reconsideration of Standard 119's effective date by maintaining the present date of March 1, 1975.

To avoid a costly production shutdown on the effective date to engrave tire molds with the DOT compliance symbol required by the standard, the National Highway Traffic Safety Administration (NHTSA) proposed a modification of the Part 574 prohibition on the symbol's use prior to the effective date (39 F.R. 3967, January 31, 1974). The Rubber Manufacturers Association and five tire manufacturers agreed that the DOT should be engraved on tire molds prior to the effective date, but objected to the expense of covering the DOT with a label stating that "no Federal motor vehicle safety standard applies to this tire," when the DOT appears on tires which (presumably) satisfy Standard 119 requirements. Firestone pointed out that the large label size could obscure other label information. Goodrich noted that, as proposed, the DOT could be molded on tires which met no standard and could mislead a user if the label fell off.

The NHTSA will not permit the appearance of the DOT compliance symbol on any item of motor vehicle equipment to which no standard is applicable. The terms "applicability" and "applies" have only one meaning for Federal motor vehicle safety standards: that the vehicle

or equipment concerned is subject to a safety standard. To permit use of the DOT symbol on vehicles or items of motor vehicle equipment to which no standard applies would confuse the meaning of the symbol and the concept of compliance.

In response to Firestone and Goodrich, the NHTSA has modified the lettering size on the label and limited use of the DOT symbol to tires for which a standard has been issued. With the small lettering size, the rubber labels used on retread tires can be applied over the DOT symbol in fulfillment of the requirement. Another method which manufacturers did not mention but which would be permissible is the removal of the DOT at the same time imperfections are buffed off the tire.

All comments on the proposal objected to the specific location requirements for treadwear indicators based on the concept of even tread wear across the tread width. Goodyear demonstrated in a meeting with the NHTSA Tire Division on February 13, 1974, and detailed in its submission to the Docket, the difficulty in equating ideal tire wear with actual road experience. They recommended the simpler concept that a tire has worn out when any major tread groove has only  $\frac{2}{32}$  in tread remaining. The NHTSA has concluded that treadwear indicators must be placed at the discretion of the manufacturer to give a person inspecting the tire visual indication of whether the tire has worn to a certain tread depth. Accordingly, the lateral location requirements for treadwear indicators have been deleted from the standard.

There was no discussion of the lettering size and depth proposal, and these proposals are adopted as proposed.

The comments requested reconsideration of the standard's March 1, 1975, effective date (published February 1, 1974, 39 F.R. 4087), asserting the need for 18 months of lead time following publication of this notice to engrave tire molds as required by the standard. The NHTSA has found that 11 months is sufficient leadtime to accomplish these changes, and accordingly these petitions are denied.

To correct an inadvertent omission in the amendment of Standard No. 119 in response to petitions for reconsideration (39 F.R. 5190, February 11, 1974), superscripts are added to Table III entries for "All other, A, B, C, D range tires".

In consideration of the foregoing, Parts 571 and 574 of Title 49, Code of Federal Regulations, are amended. . . .

*Effective date:* Standard No. 119 amendments: March 1, 1975. Part 574 amendment: April 3, 1974. Because the Part 574 amendment creates no additional burden, and because modification of tire molds must begin immediately, it is found for good cause shown that an effective date less than 180 days after issuance is in the public interest.

(Secs. 103, 112, 119, 201, Pub. L. 89-563, 80 Stat. 718; 15 U.S.C. 1392, 1401, 1407, 1421; delegation of authority at 49 CFR 1.51.)

Issued on March 28, 1974.

James B. Gregory  
Administrator

**39 F.R. 12104**  
**April 3, 1974**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 119****New Pneumatic Tires for Vehicles Other Than Passenger Cars**

(Docket No. 74-25; Notice 2)

This notice amends the definition of "test rim" in 49 CFR 571.109 (Motor Vehicle Safety Standard No. 109) and modifies related provisions of that section and § 571.110 (Motor Vehicle Safety Standard No. 110). A conforming amendment is made to similar provisions in § 571.119 (Motor Vehicle Safety Standard No. 119). The notice of proposed rulemaking on which this amendment is based was published on July 10, 1974 (39 F.R. 25329).

The definition of "test rim" has previous to this amendment referenced the 1967 and earlier editions of publications of various foreign and domestic tire and rim associations as the source for determining rim specifications and appropriate tire/rim matching information for testing tires to the requirements of Motor Vehicle Safety Standard No. 109, and for equipping passenger cars pursuant to Motor Vehicle Safety Standard No. 110. The Rubber Manufacturers' Association petitioned that this reference be changed because the publications have become outdated in terms of the rim information they provide. This amendment, which adopts the proposed rule of July 10, 1974, in essentially the form proposed, deletes the references to the 1967 and earlier publications and substitutes for them the publications of the various associations current at the time of tire manufacture.

Under the amendment, a "test rim" will be any rim listed for use with a tire size designation in any of the current publications of the various foreign and domestic tire and rim associations. The listing will apply to all tires that fit the description (by tire size designation, use category, etc.) unless the publication itself or a separately published manufacturer's document states otherwise. A manufacturer wishing to except

any tire manufactured by him from any listing would be expected to request the association to publish the exception in its publication. If it does not, the manufacturer must himself publish the exception in his own listing, which he must distribute to his dealers, this agency, and to any member of the public on request. The language of the proposal is clarified, and a conforming amendment made to Standard No. 119 to show that an exception must be published in each association publication listing the tire and rim combination. The amendment further specifies that a "listing" of a rim must contain dimensional specifications, including diagrams, for the rim. This is necessary to provide for uniformity of rim dimensions and reflects the present practice of association publications of publishing such dimensional specifications. However, dimensional specifications or a diagram of a rim need not be included in manufacturers' separate listings if the specifications and diagram for the rim appear in each association publication where it is listed.

By referencing the current publications, the amendment ends the need for Appendix "A" of Standard No. 110, which lists tire/rim combinations approved for use subsequent to the 1967 and earlier associations publications. The associations and various manufacturers should ascertain that all tire/rim combinations presently listed in that Appendix are incorporated into at least one of their respective publications before the effective date of this amendment. Moreover, the addition of new tire/rim combinations subsequent to the effective date becomes the sole responsibility of the industry. Appendix "A" of Standard No. 109, listing tire size designations, is not affected by this amendment.

An effect of the amended definition of test rim is to clarify this agency's position that each tire must be able to pass each performance requirement (except that for physical dimensions) of Standard No. 109 with any rim with which it is listed, regardless of rim width, unless that tire is specifically excepted from each listing where it appears. The requirements for physical dimensions must be met only on a test rim of the width specified for the tire size designation in Standard No. 109. A tire failing the requirements on any test rim would be considered as having failed the requirements on all test rims. This continues existing NHTSA enforcement policy.

One of the two comments received regarding the proposal objected to this aspect of the amendment, arguing that some manufacturers have traditionally certified conformity on the basis of test results using only the test rims of the specified test rim width and that no safety problems had been encountered. The NHTSA believes, however, that the interest of safety demands that manufacturers ensure that tires certified as conforming to Standard No. 109 will conform to the standard's requirements on any rim which the manufacturer lists for use with the tire and with which the tire may consequently be used in service. This position has been reflected in the guidelines for the additions of new tire/rim combinations to the Appendix of Standard No. 110,

which have required that the manufacturer demonstrate conformity to Standard No. 109 on each newly requested rim. If a manufacturer doubts the ability of his tires to conform to the standard on certain recommended rims, he has the option of excepting his tires from being used with those rims. No other objections to the proposed rule were received.

In light of the above, amendments are made to 49 CFR §§ 571.109, 571.110, and 571.119 . . . .

*Effective date:* August 5, 1975 for Standards No. 109 and 110; March 1, 1975, for Standard No. 119. The amendment to Standard No. 119 is of a clarifying nature, and should be made effective with the existing effective date of that standard. The amendment does not require substantial leadtime for conformity, and it is found for good cause shown that an effective date less than 180 days from publication is in the public interest.

(Secs. 103, 119, 201, 202, Pub. L. 89-563, 80 Stat. 718; 15 U.S.C. §§ 1392, 1407, 1421, 1422; delegation of authority at 49 CFR 1.51.)

Issued on January 31, 1975.

James B. Gregory  
Administrator

**40 F.R. 5529**  
**February 6, 1975**

## MOTOR VEHICLE SAFETY STANDARD NO. 119

### New Pneumatic Tires for Vehicles Other than Passenger Cars

**51. Scope.** This standard establishes performance and marking requirements for tires for use on multipurpose passenger vehicles, trucks, buses, trailers, and motorcycles.

**52. Purpose.** The purpose of this standard is to provide safe operational performance levels for tires used on motor vehicles other than passenger cars, and to place sufficient information on the tires to permit their proper selection and use.

**53. Application.** [This standard applies to new pneumatic tires designed for highway use on multipurpose passenger vehicles, trucks, buses, trailers and motorcycles manufactured after 1948. (39 F.R. 5190—February 11, 1974. Effective: 3/1/75)]

**54. Definitions.** All terms defined in the Act and the rules and standards issued under its authority are used as defined therein.

["Light truck tire" means a tire designated by its manufacturer as primarily intended for use on lightweight trucks or multipurpose passenger vehicles. (39 F.R. 5190—February 11, 1974. Effective: 3/1/75)]

"Model rim assembly" means a test device that (a) includes a rim which conforms to the published dimensions of a commercially available rim, (b) includes an air valve assembly when used for testing tubeless tires or an innertube and flap (as required) when used for testing tube-type tires, and (c) undergoes no permanent rim deformation and allows no loss of air through the portion that it comprises of the tire-rim pressure chamber when a tire is properly mounted on the assembly and subjected to the requirements of this standard.

#### **55. Tire and rim matching information.**

**55.1** [Each manufacturer of tires shall ensure that a listing of the rims that may be used with each tire that he produces is provided to the public. For purposes of this section, each rim

listing shall include dimensional specifications and a diagram of the rim. However, a listing compiled in accordance with paragraph (a) of this section need not include dimensional specifications or a diagram of a rim if the rim's dimensional specifications and diagram are contained in each listing published in accordance with paragraph (b). The listing shall be in one of the following forms:

(a) Listed by manufacturer name or brand name in a document furnished to dealers of the manufacturer's tires, to any person upon request, and in duplicate to: Tire Division, National Highway Traffic Safety Administration, 400 Seventh Street, S.W., Washington, D.C. 20590; or

(b) Contained in publications, current at the date of the manufacture of tire or any later date, of at least one of the following organizations:

The Tire and Rim Association.

The European Tyre and Rim Technical Organisation.

Japanese Industrial Standards.

Deutsche Industrie Norm.

The Society of Motor Manufacturers and Traders, Ltd.

British Standards Institution.

Scandinavian Tire and Rim Organisation.

(40 F.R. 5529—February 6, 1975. Effective: 3/1/75)]

**55.2** Information contained in a publication specified in S5.1(b) which lists general categories of tires and rims by size designation, type of construction, and/or intended use, shall be considered to be manufacturer's information pursuant to S5.1 for the listed tires, unless the publication itself or specific information provided according to S5.1(a) indicates otherwise.

**56. Requirements.** [Each tire shall be capable of meeting any of the applicable requirements set forth below, when mounted on a model rim

assembly corresponding to any rim designated by the tire manufacturer for use with the tire in accordance with S5. However, a particular tire need not meet further requirements after having been subjected to and met the endurance test (S6.1), strength test (S6.2), or high speed performance test (S6.3). (39 F.R. 5190—February 11, 1974. Effective: 3/1/75)】

**S6.1 Endurance.**

**S6.1.1** Prior to testing in accordance with the procedures of S7.2, a tire shall exhibit no visual evidence of tread, sidewall, ply, cord, innerliner, or bead separation, chunking, broken cords, cracking, or open splices.

**S6.1.2** When tested in accordance with the procedures of S7.2:

(a) There shall be no visual evidence of tread, sidewall, ply, cord, innerliner, or bead separation, chunking, broken cords, cracking, or open splices.

(b) The tire pressure at the end of the test shall be not less than the initial pressure specified in S7.2(a).

**S6.2 Strength.** When tested in accordance with the procedures of S7.3 a tire's average breaking energy value shall be not less than the value specified in Table II for that tire's size and load range.

**S6.3 High speed performance.** 【When tested in accordance with the procedures of S7.4, a tire shall meet the requirements set forth in S6.1.1 and S6.1.2(a) and (b). However, this requirement applies only to motorcycle tires and to non-speed-restricted tires of 14.5-in nominal rim diameter or less marked load range A, B, C, or D. (39 F.R. 5190—February 11, 1974. Effective: 3/1/75)】

**S6.4 Treadwear indicators.** 【Except as specified below, each tire shall have at least six treadwear indicators spaced approximately equally around the circumference of the tire that enable a person inspecting the tire to determine visually

TABLE I—Strength Test Plunger Diameter

Tire type:	Plunger Diameter (inches)
Light truck -----	¾
Motorcycle -----	⅝
Tires for 12-inch or smaller rims, except motorcycle -----	¾
Tires other than the above types:	
Tubeless:	
17.5-inch or smaller rims -----	¾
Larger than 17.5-inch rims:	
Load range F or less -----	1¼
Load range over F -----	1½
Tube type:	
Load range F or less -----	1¼
Load range over F -----	1½

TABLE II—Minimum Static Breaking Energy (Inch-Pounds)

Plunger diameter	Motorcycle	¾ Inch		1¼ Inch		1½ Inch	
		All 12-inch or smaller rim size	-Light truck -17.5 inch or smaller Rim Tubeless	Tube type	Tubeless	Tube type	Tubeless
	Load range						
A	150	600	2000	----	----	----	----
B	300	1200	2600	----	----	----	----
C	400	1800	3200	6800	5100	----	----
D	---	2400	4550	7900	6500	----	----
E	---	3000	5100	12500	8600	----	----
F	---	3600	5700	15800	12500	----	----
G	---	----	6300	----	----	20200	15000
H	---	----	6800	----	----	23000	18500
J	---	----	----	----	----	25000	19500
L	---	----	----	----	----	27000	----
M	---	----	----	----	----	28500	----
N	---	----	----	----	----	30000	----

For rayon cord tires, applicable energy values are 60 percent of those in table.

TABLE III—Endurance Test Schedule

Description	Load range	Test wheel speed (rpm)	Test load: Percent of maximum load rating			Total test revolutions (thousands)
			I	II	III	
			7 hrs.	16 hrs.	24 hrs.	
Speed-Restricted service						
55 m.p.h. -----	All -----	125	66	84	101	352.5
50 m.p.h. ----- )	C, D -----	150	75	97	114	423.0
	) E, F, G, H,					
	) J, L -----	100	66	84	101	282.0
35 m.p.h. -----	All -----	75	66	84	101	211.5
Motorcycle -----	All -----	250	<sup>1</sup> 100	<sup>2</sup> 108	117	510.0
All others ----- )	A, B, C, D, --	250	<sup>1</sup> 75	<sup>2</sup> 97	114	510.0
	) E -----	200	70	88	106	564.0
	) F -----	200	66	84	101	564.0
	) G -----	175	66	84	101	493.5
	) H, J, L, N --	150	66	84	101	423.0

<sup>1</sup>4 hours for tire sizes subject to high speed requirements (S6.3)

<sup>2</sup>6 hours for tire sizes subject to high speed requirements (S6.3)

whether the tire has worn to a tread depth of one-sixteenth of an inch. Tires with 12-inch or smaller rim diameter shall have at least three such treadwear indicators. Motorcycle tires shall have at least three such indicators which permit visual determination that the tire has worn to a tread depth of one-thirty-second of an inch. (39 F.R. 12104—April 3, 1974. Effective: 3/1/75) ]

**56.5 Tire marking.** [Except as specified below, each tire shall be marked on each sidewall with the information specified in paragraphs (a) through (j) of this section. The markings shall be placed between the maximum section width (exclusive of sidewall decoration or curb ribs) and the bead on at least one sidewall. The marking shall be in letters and numerals not less than 0.078 inches high and raised above or sunk below the tire surface not less than 0.015 inches, except that the marking depth shall be not less than 0.010 inches in the case of motorcycle tires. The tire identification and the DOT symbol labeling shall comply with Part 574 of this chapter. Markings may appear on only one sidewall and the entire sidewall area may be used in the case of motorcycle tires and recreational, boat baggage, and special trailer tires. (39 F.R. 12104—April 3, 1974. Effective: 3/1/75) ]

(a) The symbol DOT, which shall constitute a certification that the tire conforms to ap-

plicable Federal motor vehicle safety standards. This symbol may be marked on only one sidewall.

(b) The tire identification number required by Part 574 of this chapter. This number may be marked on only one sidewall.

(c) The tire size designation as listed in the documents and publications designated in S5.1.

[(d) The maximum load rating and corresponding inflation pressure of the tire, shown as follows:

(mark on tires rated for single and dual load)  
 Max load single ----- lbs at ----- psi cold  
 Max load dual ----- lbs at ----- psi cold  
 (Mark on tires rated only for single load)  
 Max load ----- lbs at ----- psi cold

(e) The speed restriction of the tire, if 55 mi/h or less, shown as follows:

Max speed ----- mph

(39 F.R. 5190—February 11, 1974. Effective: 3/1/75) ]

(f) The actual number of plies and the composition of the ply cord material in the sidewall, and, if different, in the tread area.

(g) The words “tubeless” or “tube type” as applicable.

(h) The word “regroovable” if the tire is designed for regrooving.

(i) The word “radial” if a radial tire.

(j) The letter designating the tire load range.

**S6.6 Maximum load rating.** If the maximum load rating for a particular tire size is shown in one or more of the publications described in S5.1(b), each tire of that size designation shall have a maximum load rating that is not less than the published maximum load rating, or if there are differing published ratings for the same tire size designation, not less than the lowest published maximum load rating for the size designation.

**S7. Test procedures.**

**S7.1 General conditions.**

**S7.1.1** The tests are performed using an appropriate new tube, tube valve and flap assembly (as required) that allows no loss of air for testing of tube-type tires under S7.2, S7.3, and S7.4, and tubeless tires under S7.3.

**S7.1.2** The tire must be capable of meeting the requirements of S7.2 and S7.4 when conditioned at any ambient temperature up to 100° F. for 3 hours before the test is conducted, and with an ambient temperature maintained at any level up to 100° F. during all phases of testing. The tire must be capable of meeting the requirements of S7.3 when conditioned at any ambient temperature up to 70° F. for 3 hours before the test is conducted.

**S7.2 Endurance.** (a) Mount the tire on a model rim assembly and inflate it to the inflation pressure corresponding to the maximum load rating marked on the tire. Use single maximum load value when the tire is marked with both single and dual maximum load.

(b) After conditioning the tire-rim assembly in accordance with S7.1.2, adjust the tire pressure to that specified in (a) immediately before mounting the tire rim assembly.

(c) Mount the tire-rim assembly on an axle and press it against a flat-faced steel test wheel that is 67.23 inches in diameter and at least as wide as the tread of the tire.

(d) Apply the test load and rotate the test wheel as indicated in Table III for the type of tire tested conducting each successive phase of the test without interruption.

(e) Immediately after running the tire the required time, measure the tire inflation pressure.

Remove the tire from the model rim assembly, and inspect the tire.

**S7.3 Strength.** (a) [Mount the tire on a model rim assembly and inflate it to the pressure corresponding to the maximum load, or maximum dual load where there is both a single and dual load marked on the tire. If the tire is tubeless, a tube may be inserted to prevent loss of air during the test in the event of puncture. (39 F.R. 5190—February 11, 1974. Effective: 3/1/75)]

(b) After conditioning the tire-rim assembly in accordance with S7.1.2, adjust the tire pressure to that specified in (a).

(c) Force a cylindrical steel plunger, with a hemispherical end and of the diameter specified in Table I for the tire size, perpendicularly into a raised tread element as near as possible to the centerline of the tread, at a rate of 2 inches per minute, until the tire breaks or the plunger is stopped by the rim.

(d) Record the force and the distance of penetration just before the tire breaks, or if it fails to break, just before the plunger is stopped by the rim.

(e) [Repeat the plunger application at 72° intervals around the circumference of the tire, until five measurements are made. However, in the case of tires of 12-in rim diameter or less, repeat the plunger application at 120° intervals around the circumference of the tire, until three measurements are made. (39 F.R. 5190—February 11, 1974. Effective: 3/1/75)]

(f) Compute the breaking energy for each test point by the following formula:

$$W = \frac{FP}{2}$$

where

W = Breaking energy

F = Force in pounds, and

P = Penetration in inches.

(g) [Determine the average breaking energy value for the tire by computing the average of the values obtained in accordance with (f). (39 F.R. 5190—February 11, 1974. Effective: 3/1/75)]

**S7.4 High speed performance.**

(a) Perform steps (a) through (c) of S7.2.

(b) Apply a force of 88 percent of the maximum load rating marked on the tire (use single maximum load value when the tire is marked with both single and dual maximum loads), and rotate the test wheel at 250 rpm for 2 hours.

(c) Remove the load, allow the tire to cool to 100° F., and then adjust the pressure to that marked on the tire for single tire use.

(d) Reapply the same load, and without interruption or readjustment of inflation pressure, rotate the test wheel at 375 rpm for 30 minutes, then at 400 rpm for 30 minutes, and then at 425 rpm for 30 minutes.

(e) Immediately after running the tire the required time, measure the tire inflation pressure. Remove the tire from the model rim assembly, and inspect the tire.

**38 F.R. 31299  
November 13, 1973**



## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 121

### Air Brake Systems—Trucks, Buses and Trailers

(Docket Nos. 70-16, 70-17; Notice No. 2)

The purpose of this notice is to amend § 571.21 of Title 49, Code of Federal Regulations, by adding Motor Vehicle Safety Standard No. 121, Air Brake Systems—Trucks, Buses and Trailers. Notices of proposed rulemaking on this subject were published on June 25, 1970 (35 F.R. 10368) and June 26, 1970 (35 F.R. 10456). The comments received in response to the notices and information obtained at a technical conference held on October 20, 1970 (35 F.R. 14736, September 22, 1970) have been considered in the development of the final rule. The trailer requirements are joined with the truck and bus requirements in a single air brake systems standard.

The standard as adopted specifies requirements for the safe performance of air brake systems under normal and emergency conditions. It should be noted that the term "air brake system" as defined in the standard applies to the brake configuration commonly referred to as "air over hydraulic," in which failure of either medium can result in complete loss of braking ability.

The standard establishes a set of requirements to govern the braking behavior of a vehicle during application of the service brakes. Principal among these are stopping performance requirements that include a minimum stopping distance requirement for trucks and buses and lateral stability and wheel lockup requirements for all vehicles. To more accurately reflect the friction characteristics of a surface with a skid number of 75, the stopping distances for trucks and buses on a dry surface have been increased over those proposed in the notice. The required distance from 60 m.p.h. is now 245 feet rather than 216 feet and the distance from 20 m.p.h. is 33 feet rather than 29 feet. The stopping distance on a wet surface at 20 m.p.h., 54 feet, has been re-

tained. Several comments indicated that there are no test facilities on which the 60 m.p.h. stop on a wet surface can be safely conducted. As a measure of brake efficiency, moreover, the 20 m.p.h. stop on a wet surface satisfactorily indicates the vehicle's behavior at higher speeds, and the standard therefore specifies only the 20 m.p.h. stopping distance test.

The requirement that the vehicle stay within a 12-foot-wide lane has been adopted as proposed. The proposed requirement that no wheel lock except momentarily has been modified to permit lockup to occur on the leading nonsteerable axle on vehicles having more than two nonsteerable axles. A review of available information indicates that satisfactory control of the vehicle can be maintained if lockup is avoided on two nonsteerable axles. The rule also permits lockup at speeds under 10 m.p.h. Such low speed lockup is not considered hazardous and allows greater flexibility in brake system designs.

Some comments stated that the requirement for a controlled stop without lockup favored one variety of stability-controlling device—the anti-lock device—over other systems such as load proportioning devices. Several comments seemed to assume that the proposal required antilock devices. The requirement that the vehicle stop without locking its wheels reflects the Administration's judgment that a vehicle with locked wheels, whatever its equipment, is unstable and uncontrollable in an emergency situation. The Administration recognizes the likelihood that manufacturers of some types of vehicles may have to incorporate proportioning or antilock devices into their systems in order to meet the stopping distance requirement. However, the manner in which lockup is prevented is not specified in the standard, and if a proportioning

device or any other device can produce the desired result, it may be incorporated into the vehicle's braking system.

Although an antilock device is not required, if it is used on a vehicle it must conform to several requirements. A warning signal must be provided to warn of total system failure, a failed device must not interfere with the operation of the service brake, and electrical elements in the system must be powered through the vehicle's stop lamp circuit. Of these requirements, the first was the subject of comments that indicated some uncertainty as to the nature of a total system failure. The reason for the requirement is that a driver ought to be warned in the event that a system on which he has come to rely has stopped working altogether. Monitoring of each device separately would be difficult and costly, while monitoring of the shared elements of the system, such as the electrical circuitry, would be relatively simple. Although electrical problems would be the most likely cause of total failure, other components may also produce such failure and the language of the requirement has not been limited to a specific type of failure. A requirement that electrical power for antiskid devices on trailers must be provided through the stop lamp circuit has been added to insure the functioning of antilock systems in vehicle combinations in which the towed vehicle has an antilock system.

The requirements for actuation and release times, for brake retardation force, and for brake power have been modified somewhat in the light of information provided by the comments. The notice proposed timing curves for brake actuation and release, but subsequent review has indicated that adherence to a timing curve is less significant than the basic ability to apply and release the brakes quickly. The curves have therefore been omitted in favor of a single application time of 0.25 second and a single release time of 0.50 second. These values are somewhat less stringent than those proposed in the notice, and reflect the judgment that a system that can meet the stopping distance requirements without lockup has less need for the rapid times originally proposed. Vehicles intended to tow other vehicles equipped with air brakes must still meet the actuation and release times with a 50-cubic-inch

test reservoir attached to the service line outlet, but the requirements for pressurization of the test reservoir itself have been deleted.

The brake retardation force requirement was the subject of numerous comments, some to the effect that the retardation force was too high to permit safe operation of vehicle combinations in which new and old vehicles are mixed, and others to the effect that the forces were too high to be achieved with reliability by available friction materials. The Administration has determined that compatibility problems are substantially lessened if the vehicle has the ability to stop without lockup and that the retention of a relatively high retardation force requirement will not lead to significant compatibility problems. It has been determined, however, that the stopping distance requirements can be met by brakes having a somewhat lower retardation force capacity than proposed, and a lower force requirement is therefore adopted.

Comments regarding the proposed brake power requirements stated that the fade characteristics required of the linings might exceed the limits of existing technology and might not be compatible with the retardation force requirements. In the light of these comments and other information it has been determined that the brake power requirements should be reduced. Accordingly the standard as adopted requires 10 decelerations at a rate of 9 feet per second per second at intervals of 72 seconds with the air pressure at 90 p.s.i. or less, and a final deceleration at 14 f.p.s.p.s. from 20 m.p.h. with a service line air pressure of 108 p.s.i. or less. In the light of the diminished power requirements, the recovery requirements have been retained with a minor adjustment from 45 p.s.i. to 40 p.s.i. in the minimum air pressure required.

A series of alterations have been made in the equipment requirements in response to comments and as a result of reevaluation by the Administration. First among these is the alteration of the stop lamp switch requirement to permit use of a pneumatic switch. The requirements for compressor capacity have been modified to require it to increase air pressure in the reservoirs from 85 p.s.i. to 100 p.s.i. in not more than 25 seconds, in place of the proposed requirement of 0-85 p.s.i. in 2 minutes. The mandatory require-

ment for a supply reservoir has been removed, and the overall reservoir capacity for trucks and buses has been reduced to 12 times the combined brake chamber capacity. The drain valve requirement has been simplified, the tolerance on the air pressure gauge has been broadened to  $\pm 7$  percent of the compressor cut-out pressure, and the low air pressure warning requirement has been modified to permit visible, nonaudible signals within the driver's forward field of view.

The notice proposed that each truck and bus have a split service brake system. It has been determined that the additional cost and greater complexity of a split system on vehicles equipped with air brakes are not accompanied by safety benefits great enough to justify requiring a split system. Accordingly, the requirement has been deleted. The remaining system with emergency capabilities is the parking brake system, and it has been determined that a parking brake system complying with the applicable requirements of the standard will provide a safe means of stopping the vehicle in the event of service brake failure.

Two aspects of the parking brake system were the subject of considerable comment. A number of comments stated that no maximum static retardation force should be specified, and several comments stated that the parking brakes should not apply automatically. The standard as adopted retains both the maximum retardation and the automatic application requirements. Each has a role in the safe operation of the parking brake system. If no maximum retardation force were specified, there would be considerable risk of lockup during emergency braking. The requirement as adopted, however, raises the upper limit on the quotient

$$\frac{\text{static retardation force}}{\text{GAWR}}$$

from 0.33 to 0.40.

Comments stated that automatic application of the brakes while the vehicle is in motion could induce hazardous instability, due to wheel lockup or to the unexpected nature of the braking. It has been determined that adequate safeguards exist in the standard to avoid such problems. The required low pressure warning signal must operate at a pressure well above the automatic

application pressure so that the driver will have sufficient warning of incipient brake application. In addition, the limit on retardation force will act to prevent lockup under all but the most severe conditions. With respect to trailers, the automatic functioning of the parking brake system is further insured by the deletion of the proposed requirement for a check valve or similar device to protect the trailer's air pressure.

The parking brake controls have been considerably simplified by uniting in one control the manual on-off operation and the release-after-automatic-application function.

Many comments revealed a misunderstanding about the Administration's purpose in specifying test conditions. It should be understood that the standards are not instructions for, or descriptions of, manufacturer tests. For example, the condition that states that "(t)he wind velocity is zero," simply means that the vehicle must meet the applicable tests if (among other things) the air is still, that is, if the wind neither helps nor hinders the vehicle's performance. One way in which the manufacturer could check his vehicle's conformity with reference to the zero wind condition is to run the braking test with a resultant tailwind. With reference to another condition, such as the surface with a skid number of 75, the test could be run on a surface having a skid number lower than 75. Manufacturers are required to exercise due care to insure that their vehicles will meet the standard if tested by the Administration under the specified conditions, but they are at their own discretion in devising an appropriate testing program for that purpose.

A few changes have been made in the test conditions. The notice had proposed, in addition to the zero wind condition, that the vehicle stay in the roadway with a wind of 30 m.p.h. from any direction. On review, the 30-m.p.h. speed has been determined to be excessive and to unduly increase the problems of testing. In addition, most stability problems are controlled by preventing wheel lockup, as required by the standard, and the crosswind condition has therefore been deleted. In place of the "lightly loaded vehicle weight," a weight condition based on the vehicle's unloaded weight is used.

*Effective date.* Because of the development work and preparation for production that this

standard will require, it is found that an effective date later than 1 year from the date of issuance is in the public interest. Accordingly, the standard is effective January 1, 1973.

In consideration of the above, § 571.21 of Title 49 of the Code of Federal Regulations is amended by adding Motor Vehicle Safety Standard No. 121 as set forth below. This standard is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407, and the delegation of authority by the Secretary of Transportation to

the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on February 19, 1971.

Douglas W. Toms,  
Acting Administrator, National  
Highway Traffic Safety Administration

**36 F.R. 3817**  
**February 27, 1971**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

### Air Brake Systems—Trucks, Buses, and Trailers

(Dockets No. 70-16 and 70-17; Notice 3)

The purpose of this notice is to respond to petitions requesting reconsideration of Motor Vehicle Safety Standard No. 121, *Air Brake Systems*, § 571.121 of Title 49, Code of Federal Regulations. After issuance of the standard on February 19, 1971 (36 F.R. 3817, February 27, 1971), petitions for reconsideration were filed pursuant to 49 CFR 535.35 by a number of vehicle and equipment manufacturers. This notice grants some of the requests by amending the standard, and denies other requests.

1. *Service brake system.* The service brake system requirements have been reorganized for reasons of clarity and have been amended with respect to the order of testing and the number of tests to be conducted. The dynamometer tests have been separated from the road tests and placed in section S5.4. The road test section has been amended to specify the order in which the stopping tests are to be run. The section is further amended to provide that a truck or bus will be stopped six times for each combination of loading, speed and road conditions and that it will be considered to meet the requirement if one stop is made in the required distance with the required stability and freedom from wheel lockup. This amendment has been adopted to ease the problems arising from a test driver's unfamiliarity with a vehicle's behavior. To accommodate antilock systems that permit some wheels to lock for longer periods than others, the reference to "momentary" lockup in S5.3.1 and S5.3.2 has been amended to refer to "controlled" lockup.

S5.3.2, *Stopping Capability, Trailers*, has been amended in minor respects, to make it clear that the 90 p.s.i. pressure level is system-wide and not confined to the brake control lines, and to provide that the trailer is to stop the combination of

vehicles without benefit of the towing vehicle's brakes.

The brake power requirements of S5.4.2 and the dynamometer test conditions of S6.2 are each amended to refer to the drum "or disc" to avoid the possibility that the sections would be misconstrued as requiring drum brakes. The brake recovery requirements of S5.4.3 are amended by lowering the minimum air pressure requirement to 20 p.s.i. from 40 p.s.i. This amendment is based on a reassessment of the problems associated with over-recovery that has led the NHTSA to conclude that 20 p.s.i. is a reasonable level.

The requirements concerning antilock system failure and the provision of power for antilock systems on trailers have been separated from the other service brake requirements and placed in S5.5.

2. *Service brake retardation force.* The standard as adopted in February 1971 required the brakes on each axle to produce specified retardation forces at each of several brake chamber air pressures. As indicated in the issuance of the standard, the primary goal of the retardation force requirement was to insure brake compatibility between vehicles used in combination. On review of petitions requesting exemption of vehicles that do not tow other vehicles from the retardation force requirements, the NHTSA has determined that for these vehicles the requirements are not necessary. Accordingly, S5.4.1 is amended to apply only to vehicles that are intended to tow or to be towed by another vehicle equipped with air brakes.

In response to petitions objecting to axle by axle force calculations, the retardation force requirements are further amended to provide that the retardation force for all axles shall be added

together and divided by the sum of gross axle ratings to arrive at the values shown in Table III. The effect of the amendment is to allow greater flexibility in the allocation of braking force between axles.

The overall braking force required of the vehicle's brakes, however, remains the same as before. The NHTSA has considered and rejected the requests for different retardation values and for substitution of SAE J992a for the dynamometer tests of S5.4.1. The present retardation force requirements in Table III are considered to be a reasonable accommodation between the need for compatibility with existing vehicles and the need to establish a uniform pattern of brake response over the range of operating pressures. The dynamometer procedures of S5.4.1.1, which permit measurement of brake forces on an individual vehicle, are more suited to the regulatory purpose of this standard than are the procedures of SAE J992a, which provides for road testing of vehicles in combination. The agency recognizes that the availability of dynamometers of sufficient capacity is a concern to many petitioners, but available evidence indicates that dynamometer access will not be a major long-term problem. The petitions to delete dynamometer testing are therefore denied.

3. *Parking brake system.* The parking brake system required by S5.4 of the standard had several features that were widely objected to by the petitioners. In particular, petitioners objected to the requirement for automatic application of the parking brakes in the event of pressure loss. Although the standard specified a maximum retardation force level of 0.40 to reduce the possibility of lockup during automatic application, many petitioners stated that automatic application of the brakes would surprise the driver and adversely affect his handling of the vehicle.

The NHTSA remains convinced that automatic application of the parking brake is a satisfactory means of providing braking in the event of service brake failure. The low pressure warning signal required by S5.1.5 is considered adequate to warn a driver of impending application of the parking brake to avoid most of the effects of surprise. However, review of the peti-

tions has persuaded the agency that automatic application of the parking brake need not be mandatory. Accordingly, the standard is amended to provide for an alternative parking brake system that is manually, and not automatically, applied.

To accommodate the new alternative, the parking brake requirements have been reorganized into two main sections: S5.6, which specifies requirements for parking brakes generally, and S5.7, which sets out the emergency braking capabilities for automatic systems (S5.7.1) and manual systems (S5.7.2) on trucks and buses. A third section (S5.8) deals with the emergency braking of trailers.

The general requirements of S5.6 are derived from S5.4 of the original standard, with some additions and amendments. The braking force generated by the parking brakes is measured, at the manufacturer's option, either by a static draw bar test, which must produce a force level of 0.28, or by a holding test on a 20% grade. The tests are to be conducted in both forward and rearward directions. As provided in the original standard, the parking brakes must be applied by an energy source that is independent of the air pressure in the service brake system.

Additional changes have been made in S5.6 with respect to the requirements for the parking brake control. The standard as published in February 1971 specified the shape and color of the parking brake control, as well as its location, and provided that manual operation and release after automatic application should be accomplished by movement of a single control. After review of the petitions, it has been decided to allow greater flexibility in the design and operation of the control. Efforts are now underway within the industry to standardize controls, and it may be that a consensus will be reached upon which a more standardized control can be based. In the meantime, the standard's specifications have been reduced to requiring the control to be separate from the service brake control, operable from the normal driving position, and identifiable as to its method of operation. The shape, color, and number of controls, and the method of operation, are left to the judgment of the manufacturer.

The major difference between the emergency braking performance required of a vehicle with a manual system and the performance required of a vehicle with an automatic system is that a vehicle with a manual parking brake is required by S5.7.2.3 to meet a stopping distance test with an air pressure failure in the service brake system. Although a manufacturer may elect to use the parking brakes to provide this emergency stopping capacity, he may use other components to supplement the parking brakes or he may use a system entirely independent of the parking brakes.

A vehicle with an automatic parking brake may, at the manufacturer's option, either meet the stopping distance test of S5.7.2.3, or have a maximum static retardation force not greater than 0.40, measured in accordance with S5.6.1. Several petitioners requested deletion of the maximum retardation force levels for automatic brakes. Although the agency remains concerned about the effects on a vehicle's stability of automatic brake application, it has determined that a vehicle capable of meeting specified stopping distance requirements when the brakes are automatically applied should not be held to the maximum force level requirement.

With respect to both automatic and manual brakes, provision is made for control of the parking brakes of the towed vehicle. It was noted by some petitioners that automatic application of a towing vehicle's brakes, without simultaneous application of a towed vehicle's brakes, could lead to unstable braking and possibly to jackknifing. To lessen the risk of such instability, the automatic brake requirements are amended to require the venting of the towed vehicle's supply line so that its brakes will apply upon application of the towing vehicle's brakes.

4. *Other provisions amended.* In S4 the definition of "antilock system" has been amended to refer to "rotational wheel slip" to distinguish the phenomenon controlled by the antilock systems from other types of wheel slip. The definitions of "gross axle weight rating," "gross vehicle weight rating," and "unloaded vehicle weight" have been omitted, since they have been incorporated in the general definitions section of Part 571, 49 CFR 571.3(b).

The equipment requirements have been amended in a number of minor respects. S5.1.1 has been amended to include supply reservoir capacities. The reservoir capacity required has not been changed, but the requirement is clarified by striking the words "greater than" in S5.1.2.1 and in S5.2.1.1. The requirement for a towing vehicle protection valve (S5.1.3) has been amended by the use of the broader term "system" in place of "valve."

The pressure gauge requirement (S5.1.4) has been amended to require a gauge in each service brake system, rather than to require a gauge directly on the service reservoir. The warning signal requirement (S5.1.6) is amended in response to petitions to provide that warning must be by means other than the pressure gauge indicator. The antilock warning signal requirement (S5.1.6), has been amended to limit the warning to the event of electrical failure, pending investigation of other types of failure for which a warning may be practicable.

5. *Petitions denied.* Several requests for amendment of the equipment requirements have been denied. A request that the service reservoirs be connected in series has been rejected as unnecessary and design restrictive. Requests for reduction in minimum reservoir capacity are also denied. The present requirement of 12 times the combined volume of service brake chambers has been applied by the SAE to intracity buses and school buses for some time and is considered a reasonable requirement for other vehicles, particularly in the light of additional demands made on air capacity by antilock systems.

Several petitions requested amendment of the vehicle weights specified in S5.3 for the service brake tests. Requests were made for additional weight on the vehicle in its unloaded condition to allow for the weight of the completed body and for safety equipment such as roll bars used during testing. Since the vehicles tested by the NHTSA will be completed vehicles, however, it is not appropriate to specify an additional weight. If an incomplete vehicle manufacturer wishes to ascertain the performance of this vehicle in one or more of its completed variations, he may do so by placing weights on the incomplete vehicle, by actually mounting a body on

it, or by any other means that are reasonably calculated to evaluate the braking performance of the completed vehicle. With respect to safety equipment, the NHTSA regards the problem of weight associated with safety devices as easily surmountable. Each of the petitions requesting changes in the weights specified in S5.3 is accordingly denied.

A number of petitions requested increases in the stopping distance required by S5.3.1. The distances specified are considered reasonable and well within the state of the art. Greater distances would increase the disparity between trucks and cars and be contrary to the interests of safety. The petitions are denied. Similarly, the petitions for an increase in the skid number of the dry surface from 75 to 80 are denied. The 75 number is representative of road surfaces, and has been a part of the consumer information requirements long enough that the availability of skid pads should not be a problem. Similarly, the requests that 30 skid number tests be run on dry pavement or that they be abandoned are denied. Braking in wet weather is an evident problem with vehicles of all types, and the NHTSA regards the wet-track test as an essential part of the standard.

The stopping capability requirement for trailers (S5.3.2) was the subject of petitions requesting deletion of the 90-p.s.i. pressure level requirement and objecting to the uncertainty involved in determining whether the tractor or the trailer is responsible if the trailer leaves the 12-foot-wide lane. The NHTSA regards a uniform service line pressure specification as an appropriate means of insuring uniformity in trailer response, even though some tractors may be designed to modulate air pressure in the lines. Since only the trailer is to be braked, the cause of deviation from the lane will be the trailer's brakes, not the tractor's. The petitions are denied.

The actuation and release requirements of S5.3.3 and S5.3.4 were subject to a variety of objections. One petitioner requested deletion of both requirements, while others requested elimination of the 50-cubic-inch test reservoir for trailers that tow other trailers. On review, the NHTSA has decided to deny the petitions. Although the stopping distance test of S5.3.1

necessarily limits the actuation time that a manufacturer can allow, the additional constraint placed on timing by S5.3.3 has the important effect of producing full braking at a very early point during the braking maneuver where the speed is greatest and the effects of a reduction in speed most significant from the standpoint of the forces involved in a crash. The brake release time has an important bearing on the maneuverability and directional stability of vehicles in emergency situations. It can sometimes be as important for the brakes to come off quickly and evenly as for them to be applied quickly.

The 50-cubic-inch test reservoir has been employed for some time in the SAE brake testing. It has therefore been retained. Other suggestions in the petitions for service reservoir timing and for additional test component specifications are not adopted at this time but may be appropriate subjects for future amendment.

With respect to the loading conditions specified in S6.1.1, a number of petitioners stated that the front-rear brake balance needed to achieve conforming performance on a truck-tractor loaded to GVWR in its bob-tail configuration would not be the best balance for that tractor when towing a trailer. This appears to be a valid objection, but the most obvious alternative—testing with a trailer in tow—involves complexities that have not been fully discussed in the petitions. A notice is therefore being prepared to propose that a truck tractor be tested with a trailer during the stopping distance tests.

*Effective date:* September 1, 1974. Review of the numerous petitions for extension of the effective date from January 1, 1973, has led to the conclusion that an effective date of September 1, 1974, would permit a longer period of fleet testing to evaluate the durability of the new systems and that the resulting production systems are likely to be substantially improved by the additional time allowed. An effective date later than one year from the date of issuance is therefore found, for good cause shown, to be in the public interest.

In consideration of the above, Motor Vehicle Safety Standard No. 121, Air Brake Systems, in § 571.21 of Title 49, Code of Federal Regulations, is amended to read as set forth below. This amendment is issued under the authority of sec-

tions 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407, and the delegation of authority by the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

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Issued on February 16, 1972.

Douglas W. Toms  
Administrator  
**37 F.R. 3905**  
**February 24, 1972**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

### Air Brake Systems—Trucks, Buses and Trailers

(Docket No. 70-17; Notice No. 4)

The purpose of this notice is to respond to petitions filed pursuant to 49 CFR § 553.35, seeking reconsideration of the amendments to Motor Vehicle Safety Standard No. 121, Air Brake Systems, published February 24, 1972 (37 F.R. 3905). The petitions are granted in part and denied in part.

#### I. *Amendments*

S5.1.6 International Harvester stated that the operation of the antilock warning system should be the same as that of the low pressure warning signal under S5.1.5. S5.1.6 presently requires an audible warning of at least 10 seconds duration regardless of whether the visible signal required by the section is within the driver's forward field of view. The change requested by International Harvester would require an audible warning only if the visual warning is out of the driver's forward field of view. On reconsideration, the NHTSA has concluded that the system requested by International Harvester will give the driver adequate warning of antilock system failure. S5.1.6 is therefore being amended to parallel S5.1.5.

S5.1.5 and S5.1.6 In a letter designated as a request for clarification or interpretation, General Motors suggested that because diesel systems do not have an "on" position, they might be considered exempt from the requirement that the antilock warning signal must operate when the ignition is in the "on" position. Although the NHTSA does not consider it likely that the requirement will be understood as exempting diesels, the agency has concluded that amending the standard to refer to the "run" position as suggested by GM would avoid any possibility of misinterpretation. S5.1.5 and S5.1.6 are amended accordingly.

S5.2.1.1 Midland-Ross requested that a pressure should be specified at which the protected reservoir should be capable of releasing the parking brakes. On reconsideration, it seems appropriate to specify a pressure that corresponds to the lower end of the range of pressures maintained by current compressors. The section is therefore amended to specify a pressure of 90 p.s.i. The related question of when the brake is considered to be released, also raised by Midland-Ross, does not require amendment. The NHTSA considers a brake to be released at the point where it no longer exerts any torque.

S5.2.1.2 In response to a question in the Midland-Ross petition and a related request for interpretation by Wagner Electric Corporation, this section is amended by adding the word "service" before "reservoir", so that the section, as amended, requires the total service reservoir volume to be at least eight times the combined volume of all service brake chambers at maximum travel of the pistons or diaphragms. The amendment reflects the basic intent of S5.2.1.2, which is to have a specified volume of air available to the service brakes.

S5.4 Several petitioners stated that S5.4 appeared to exempt some vehicles from the dynamometer requirements. This impression is erroneous, in that all vehicles are required to conform to S5.4. The source of the confusion appears to be the sentence in S5.4 which states that "[a] brake assembly that has undergone a road test pursuant to S5.3 need not conform to the requirements of this section". The intent of the standard is to conduct the dynamometer tests on new brake assemblies, and the quoted sentence was intended to make it clear that a single brake assembly would not have to pass the road test

and the dynamometer test in succession. The sentence is being amended to clarify its meaning.

S5.7.1.4 This section is amended in response to a request by Wagner Electric, to require manual application whenever the system pressure prevents automatic application.

## II. Provisions not amended

With respect to the remaining petitions, no changes are being made in the standard. In some cases this is because the petitioner has misinterpreted the applicable provisions to his disadvantage and needs no amendment to obtain the relief he wants. In other cases, the agency has concluded that the requested amendments do not serve the need for motor vehicle safety. In one or two cases, the change requested may prove desirable but cannot be fully evaluated without further information. The following discussion deals with the petitioned requirements in numerical order.

S3. Clark Equipment Company requested the addition of trailer converter dollies to the list of affected vehicles. The addition is not necessary, in that a converter dolly is a "trailer" within the meaning of that term in 49 CFR 571.3(b).

S5.1 Clark Equipment Company requested an amendment to exclude vacuum brake systems from the equipment requirements of S5.1. Despite the reference to a vacuum assist in S4, the standard does not apply to vacuum brakes and therefore does not require vacuum systems to have the equipment described in S5.1.

S5.1.2.2 It was suggested by Midland-Ross that the requirement that the reservoir must be capable of "withstanding" the specified pressure was not sufficiently precise. It may be that experience will show a need for quantification of this requirement, but the agency does not consider it to be necessary at this time. A reservoir will be considered to withstand the test pressure if it shows no pressure loss during the test interval.

S5.1.3 It was suggested by Midland-Ross that the requirements for the towing vehicle protection system should be amended to indicate the degree of protection required and the operating modes protected. The agency's response is much the same as its response on S5.1.2.2: the suggestion may prove to have merit, if systems appear

which cause problems in service. At this point, however, the agency will retain the broad requirement that a towing vehicle must have a system to protect it from the loss of air pressure in the towed vehicle, without regard to the system's design or method of operation.

S5.1.5 Midland-Ross requested an increased pressure level at which the low pressure warning signal actuates, so that it would be above the protection valve trip pressure used in new trailers. The requested change is not necessary, in that the standard does not now prevent the manufacturer from setting the signal actuation level at a pressure above 60 p.s.i. If Midland-Ross wishes to set its level at 80 p.s.i., it may do so.

S5.1.6 Clark Equipment Company requested that the antilock warning signal requirements be expanded to apply to the failure of a towed vehicle's antilock system. The NHTSA is receptive to further discussion of this issue. However, it has decided not to adopt the request at this time. Trailers are not required to have provision for antilock warning systems, and requiring towing vehicles to accommodate systems that are not likely to exist would be unjustified.

S5.3.1 Two petitioners requested amendments of the stopping distance requirements. The Carlisle Corporation requested a longer stopping distance, and Midland-Ross requested that the reference to "controlled lockup" be amended to specify a system that would provide for resumption of wheel rotation at some point before the speed falls to 10 m.p.h. Both requests are denied. The distances specified are considered to be appropriate and within the current state of the art. The requested change with respect to wheel lockup would permit systems in which all wheels could be completely locked for substantial periods, a situation that S5.3.1 was designed to avoid.

S5.3.3 Midland-Ross requested that Figure 1, referenced by this section, should be amended by specifying a pressure of 100 p.s.i. in both reservoirs, by omitting the tractor protection valve from the test rig, and by employing a service brake control valve rather than a brake pedal. Because S5.3.3 specifies a pressure of 100 p.s.i., it should be clear that each reservoir would be at that pressure, and no amendment is necessary.

A protection valve is used because such valves are in widespread use, even though they are not required by the standard. The service brake pedal specified in Figure 1 is a service brake foot control valve. No change of label appears necessary.

S5.4.1 International Harvester requested the deletion of this section as unnecessary. As stated before, the purpose of the section is to promote compatibility between the brakes of vehicles used in combination. The agency is of the opinion that it serves the stated function and has therefore retained it.

S5.4.2 Wagner Electric and the Carlisle Corporation each objected to certain aspects of this section. Wagner Electric requested the reinstatement of the phrase "at least" before the deceleration of 9 f.p.s.p.s., and requested the use of the phrase "a minimum" in S5.4.2.1, on the grounds that it is impossible to achieve a deceleration rate of exactly 9 f.p.s.p.s. In response, it should be pointed out that it is not necessary for a manufacturer to conduct his tests at exactly the specified rate, but only to test in such a manner as to assure himself that if the brakes were to be tested at that rate they would meet the requirements. It is to his advantage to test under less favorable conditions than those specified in the standard. The insertion of the language requested by Wagner would, if anything, make the test more severe for the manufacturers, in that the government could run tests with average decelerations in excess of 9 f.p.s.p.s. making the "worst case" situation much more difficult to ascertain.

The Carlisle Corporation objected to procedural disparities between the retardation force tests of S5.4.1 and the brake power tests of S5.4.2. The basic procedural difference between the sections is that the measurement period under S5.4.1 begins when the specified air pressure is reached whereas the period under S5.4.2 begins with the onset of deceleration. Although it may be that different instrumentation will be required in the two tests, they are not for that reason inconsistent or incompatible. The NHTSA considers each procedure to be appropriate for the aspect of performance that it measures.

S5.4.3 The Carlisle Corporation requested a further reduction in the lower limit of the re-

covery force, from the current level of 20 p.s.i. to 10 p.s.i. The NHTSA considers a brake system that produces a deceleration of 12 f.p.s.p.s. with a pressure of only 10 p.s.i. to be too sensitive and therefore denies the petition.

S5.5.2 Clark Equipment Company objected to the use of the stop lamp circuit to power the antilock system. The basis for the requirement is the need for compatibility between trucks and trailers made by different manufacturers. The stop lamp circuit is the most suitable electrical connection between trucks and trailers because it is always energized when the brakes are applied. It was therefore chosen as the source of power. The agency is of the opinion that the stop lamp circuit has adequate power for single trailer applications. For multiple trailers, it may be necessary to employ complementary systems as permitted by S5.5.2. The petition is therefore denied.

S5.6.1 In response to a request for interpretation by International Harvester, the intent of this section is to require parking brakes on each axle other than steerable front axles.

S5.6.2 Midland-Ross suggested the amendment of this section to specify that a sliding bogie on a semitrailer shall be placed in its most favorable position. As presently worded, the section is silent with respect to bogies so that the NHTSA will be obliged to test in a manner that favors the manufacturer. However, if there are indications that the position of the bogie makes a substantial difference in the braking performance of the vehicle, the agency will consider rule-making to specify that the trailer must meet the requirements with the bogie in any position.

S5.7.1.1 Wagner Electric requested an amendment to provide for brake application when the pressure in "any" service reservoir is less than the automatic application pressure level. The section now requires application when "all" service reservoirs are below that level. The NHTSA does not consider the requested amendment necessary to permit the type of system that Wagner envisions. It is permissible under the present wording for a manufacturer to have a system that applies the brakes upon a low pressure signal from a single reservoir. To require operation in such a case, as Wagner requests, would elimi-

nate systems that are capable of fully applying the service brakes despite low pressure in one reservoir.

S5.7.2.2 The Clark Equipment Company requested deletion of "brake fluid housing" from the list of items whose failure must not affect the parking brake system. The purpose of the section is to make it clear that the sharing of components by the service and emergency braking systems should not be construed as permitting malfunction of the parking brake system despite the provisions of S5.6.3. The petition is denied.

S5.8 The Clark Equipment Company requested the deletion of the phrase "or S5.6.2" from this section, on the grounds that it converts the requirement into a parking brake requirement that may be weaker than the emergency braking performance currently required under the regulations of the Bureau of Motor Carrier Safety. However, despite the use of .20 rather than the value of .28 specified in S5.6.1, the trailer under S5.6.2 is loaded to its GVWR and the supporting dolly is unbraked so that the braking performance required by the two sections is nearly identical. The NHTSA has therefore decided to retain the option of S5.6.2 under S5.8.

S6.1.1 Midland-Ross requested that the loading of a trailer be based on the sum of its GAWR's rather than on its GVWR. A GVWR designation for trailers is required by Part 567, and the agency considers it appropriate to specify GVWR as the test condition under this section.

S6.1.7 International Harvester again questioned the appropriateness of using a skid number of 75 for road tests. This issue has been raised

a number of times in the course of the various braking standard rulemakings. Although the NHTSA is not prepared at this time to state that a number higher than 75 ought to be selected, the agency intends to collect additional data concerning road surfaces with a view to possible future changes.

S6.1.9 Midland-Ross stated that parking brake tests for semitrailers should be conducted with the trailer front end supported by the trailer landing gear. The use of the parking brakes as part of the emergency braking system and the unknown effect of the friction in the landing gear system weigh against the adoption of this requirement. The petition is denied.

S6.2.1 The Carlisle Corporation requested that a 5% tolerance be specified in the dynamometer loading. The request is denied, for the reasons given in the preceding discussion of Wagner Electric's petition on S5.4.2.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 121, 49 CFR § 571.121 is amended . . . .

*Effective date:* September 1, 1974.

This rule is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407, and the delegation of authority at 49 CFR 1.51.

Issued on June 21, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 12495**  
**June 24, 1972**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

### Air Brake Systems

(Docket No. 73-13; Notice 3)

This notice amends Motor Vehicle Safety Standard No. 121, *Air brake systems*, by modifying the emergency stopping distance requirements for truck-tractors, the parking brake requirements for trailer converter dollies, and the recovery requirements for antilock equipped brakes, and by establishing a new test condition for loaded truck-tractors, special test conditions for certain drive and axle configurations, and a new burnish condition for road tests.

The amendments adopted by this notice represent a partial adoption of the changes proposed in Docket No. 73-13, Notice 1 (38 F.R. 14963; June 7, 1973). The comments to the proposal were divided as to the merits of most of the changes proposed. Running throughout the comments, however, was an overriding concern with lead time. Although a manufacturer might favor a change, such as the proposed change in the burnish condition, he may find himself unable to adjust to it within the time remaining before the standard becomes effective on September 1, 1974. The NHTSA, for its part, does not consider the proposed changes significant enough to warrant postponing the effective date of the standard. The agency has therefore adopted two provisions for which lead time appears to be a problem—the new burnish condition and the new truck-tractor test condition—as options for the period between September 1, 1974, and September 1, 1976. Of the remaining changes proposed in Docket 73-13, some are adopted effective September 1, 1974, others are not being adopted and will not be further considered for adoption, and others remain as candidates for adoption. If the latter are adopted, they will become effective at some date beyond September 1, 1974. The treatment accorded each of the proposed changes is set out in order below.

**54.** Definitions were proposed for “isolated reservoir” and “service reservoir”. Insofar as the principal use of these definitions was to be in proposed amendments which are not being adopted at this time, there is little purpose in adding them to S4 at this time. They are therefore not adopted.

**55.1.2.5** This new section was to have been added to prevent the diversion of air from the service reservoirs into other reservoirs when the service reservoir pressure is below 60 psi. In addition to questions of lead time, several comments stated that the equipment served by auxiliary reservoirs, such as windshield wipers, often plays a role in safety as significant as that of the brake system. In consideration of these factors, the section is not being adopted at this time, and if subsequently adopted will take into account both lead time and the effects on other safety systems.

**55.1.3** The amendment proposed to the towing vehicle protection system requirements was to have accompanied the amended emergency braking requirements of S5.7, and would have designated the protection system as the system enabling the vehicle to meet the emergency stopping requirements of S5.7.2.2 and S5.7.2.3. The agency has decided to defer action on the amendments to S5.7, as discussed below, and accordingly takes no final action on S5.1.3 at this time.

**55.1.6** An amendment was proposed to the antilock failure signal requirements in response to a petition by Berg Manufacturing Company. Berg has subsequently withdrawn its petition, and in the absence of compelling reasons to adopt the proposed change, the NHTSA has decided not to amend S5.1.6.

**55.2.1.1** The requirement for the reservoir used to release the parking brakes was to be amended to specify two brake releases, rather than one, and to specify the initial pressure from which these releases were to be accomplished. The agency continues to regard these changes favorably, but has decided to defer final action until the issuance of amendments concerning the parking and emergency systems, as discussed under sections S5.6 and S5.7.

**55.3.1** and **55.3.2.** Rather than amend the general language of these sections concerning the circumstances under which lockup is permitted during a stop, the agency has decided to leave the sections essentially unaltered. In response to requests to clarify the treatment accorded liftable axles, the section is amended to permit, in effect, liftable axles without antilock on vehicles with more than two nonsteerable axles. Liftable axles on vehicles with two nonsteerable axles would continue to be subject to the no-lockup requirement except for controlled lockup allowed by an antilock system.

The principal change proposed for S5.3.1 and S5.3.2 had been a change in the description of permissible lockup from "controlled lockup allowed by an antilock system" to "lockup of wheels controlled by an antilock system that does not permit more than half the wheels on any controlled axle to lock more than momentarily." The intent of the proposed revision was to forestall systems whose "control" over the lockup of wheels, although nominally within the meaning of the language, might be so marginal as to permit more than half the wheels on a tandem axle to lock throughout the duration of a stop. The proposed amendment, however, was read by some manufacturers as expressly permitting systems in which half the wheels on each axle would not be sensed or monitored by the antilock controller or cycled by the antilock system. Such was not the intent of the proposal. It appears, on further review, that such systems are not currently in prospect. The agency has concluded that the better course is not to amend the "controlled lockup" language at this time, but to observe developments in the industry, with a view toward amending the requirements if subsequent events indicate a safety need.

**55.3.4** The notice had proposed increasing the release time for trailers from 0.50 second to 0.60 second. In the face of several objections to the proposal on the grounds that it ran counter to the need for coordination of braking between vehicles in combination, and on the basis of information indicating that the timing problem is solvable for trailers, the proposal is being withdrawn.

**55.4.1** The notice had proposed deleting the retardation force requirement, leaving it applicable only to towed vehicles. The change had been proposed as a result of the proposed amendment to the tractor test conditions whereby the tractor would be tested with a trailer. In the light of the comments, and of the continuance of the current tractor test conditions as an option, the NHTSA has decided not to adopt the proposed change.

**55.4.3** The notice proposed to delete the minimum recovery pressure requirement for brakes equipped with antilock systems, leaving the 20 psi minimum force level for other brakes. Upon further consideration, the agency has concluded that a minimum recovery force requirement should be retained for antilock equipped brakes, but at a level below 20 psi. The agency has determined that 12 psi is a minimum level that permits a greater variety of brake linings while retaining a residual protection against oversensitive brakes in the event of antilock failure. Accordingly, the agency adopts 12 psi as the minimum recovery force for antilocked brakes.

**55.6** The parking brake requirements of S5.6 had been one of the principal areas affected by the proposal. In addition to changes in the parking brake application requirements and deletion of the optional static pull test for parking brake holding ability, the notice had proposed new requirements for parking brake stopping capability. This latter proposal received almost unanimous criticism. Although the agency has not concluded that the proposal is without merit, the issues raised by the comments and the evident lead time problems associated with the proposal have led the agency to conclude that no further action should be taken without additional notice and opportunity for comment and that the effective date for any such requirement should lie beyond September 1, 1974.

Of the remaining changes to S5.6 proposed by the notice, only the exemption of converter dollies from the parking brake requirements is being adopted at this time. The proposed deletion of the optional static pull test of S5.6.2 has not been carried out, and the options of S5.6.1 and S5.6.2 will be retained. The proposed parking brake application requirements of S5.6.6 and S5.6.7, which had reflected amendments proposed to the emergency braking requirements of S5.7 are not being adopted at this time, pending further rulemaking on S5.7.

**S5.7** The notice had proposed substantial revisions to the emergency braking requirements of S5.7, principally in response to a petition by ATA and to an earlier petition by Ford. The majority of the changes proposed in response to the ATA petition continue to be viewed favorably by the NHTSA. However, review of the comments suggests both that further refinements are necessary and that the proposed changes will require additional time for implementation. The agency is therefore deferring final rulemaking action on the aspects of S5.7 addressed by the ATA to a later date and will issue such changes as it may decide upon with an effective date beyond September 1, 1974.

Amendments to the emergency stopping distance requirements, presently contained in S5.7.2.3 of the standard, were proposed by two successive notices. In Docket 73-4, Notice 1 (38 F.R. 6831), the agency proposed a favorable response to a petition by Ford concerning the emergency stopping distances for short-wheelbase two-axle truck-tractors in the unloaded condition. When tested in this weight condition, truck-tractors are driven without a trailer—a condition in which they are seldom operated over the road. The effect of the proposed amendment would have been to permit a limited number of truck-tractors equipped with modulated emergency braking systems to stop in a somewhat longer distance than that permitted other vehicles with modulated emergency braking.

Comments to Docket 73-4 indicated that there were other vehicles whose braking systems were complicated by the shorter emergency stopping distance. In response to these comments, the agency proposed in Docket No. 73-13, Notice 1, to apply the longer stopping distances to other

vehicles in the unloaded condition provided they were capable of stopping within the shorter distance with the assistance of the parking brakes. The comments to Docket No. 73-13 objected to the use of the parking brake in this fashion, and some asserted that if the longer distance were appropriate for some vehicles it should be appropriate for all. Upon review of the comments, the agency has decided against a general lengthening of emergency stopping distances. Upon weighing the rarity of truck-tractor operation without a trailer against the potential costs of modifying truck-tractors to meet the shorter stopping distance in that configuration, however, the agency has concluded that the longer stopping distances specified in Column 4 of Table II should be applicable to truck-tractors, regardless of weight distribution or number of axles, but that other vehicles should continue to meet the emergency stopping distances of Column 3 of Table II. Section S5.7.2.3 is amended accordingly.

**S5.8** The notice had proposed to transfer the emergency braking capability requirement for trailers from S5.8 to S5.6.7. Until such time as the agency decides to adopt S5.6.7, S5.8 will be retained. To provide emergency capability for converter dollies, in the absence of mandatory parking brakes for them, the NHTSA has amended the section to provide for application of the dolly's service brakes in the event of complete air pressure loss in the control lines. This system is presently installed in virtually all dollies, as a result of regulations issued by the Bureau of Motor Carrier Safety (49 CFR 393.43) and is considered to be a practicable substitute for the parking brakes in emergency situations.

**S6.1** A number of revisions to the test conditions of S6.1 were proposed. These revisions are adopted in substance, with some changes in structure and in section numbering. The new truck-tractor test condition, whose insertion as S6.1.2 had caused confusion as to the fate of the old S6.1.2, has been adopted as S6.1.10, thereby leaving the current sections S6.1.2 to S6.1.9 with their present numbering.

**S6.1.8** The road test burnish procedures proposed in the notice are being adopted as an optional procedure for the period September 1, 1974, to September 1, 1976. After September 1,

1976, the new burnish procedure will replace the older procedure as the only burnish prescribed for road tests. This two-step arrangement appears necessary to permit manufacturers whose testing to date has been conducted with the current burnish procedure, and who need additional time, to phase in the new procedure.

**S6.1.10** A similar phase-in has been found necessary for the new tractor test conditions. Several manufacturers had stated that their evaluation programs had been conducted without trailers and that retesting would be necessary in order to certify their vehicles under the new conditions. The new conditions are therefore adopted as an option for the period September 1, 1974, to September 1, 1976. During this period a manufacturer may choose to test his vehicles under either loading condition, and such tests as the NHTSA conducts will be in the loading condition chosen by the manufacturer for the vehicle under test.

**S6.1.10.1** The control trailer to be used under S6.1.10 is specified as conforming to Standard No. 121.

**S6.1.10.2** The center of gravity of the loaded trailer is specified as being at a height of  $66 \pm 3$  inches above the ground. There was a variety of opinion in the comments as to how high the center of gravity should be, but upon reviewing the comments the agency has concluded that the  $66 \pm 3$  inch range originally proposed is reasonably representative of loading conditions. Axle load shift due to the rake angle of the trailer bed does not appear to be a problem in that each axle of the trailer is loaded to its GAWR when the trailer is connected to the tractor.

**S6.1.10.3** and **S6.1.10.4** In response to comments suggesting that the lengths and weight ratings of the trailers specified in the proposal were not those in most general use, the agency has increased the length of the trailer specified in S6.1.10.3, reduced the length of the trailer specified in S6.1.10.4, and lowered the gross axle weight rating for each trailer.

**S6.1.10.5** The loading condition of the trailer for tests of the tractor's brakes is substantially the same as that proposed in the notice. The tractor's fifth wheel does not have to be adjustable, as some comments inferred, but if it hap-

pens to be adjustable it must be adjusted to produce the specified weight distribution. The axle loads are to be measured at the tire-ground interfaces, in response to comments that the former reference to the "force transmitted to the tractor axles through the kingpin" was not clear as to the method of measurement.

**S6.1.10.6** and **S6.1.10.7** These sections are designed to establish performance specifications for the trailers to be used for truck-tractor testing. They are not intended as performance requirements for trailers, but only as test equipment specifications for the tractor tests. The trailer loading condition specified is somewhat different from that used in testing the performance of the tractor, because the tests are aimed at isolating the performance of the trailer brakes. The location of the fifth wheel is specified as the position determined under S6.1.10.5, but the trailer is loaded so that its axle is at its gross axle weight rating and its kingpin is at unloaded weight.

The actuation and release times specified for the trailer in the evaluation tests were questioned by several comments. It may be necessary, in some cases, for a special valve to be installed on the tractor if the tractor's system is too slow to actuate the trailer's brakes in the time specified. The purpose of the timing specification is simply to remove the tractor's performance as a factor in the trailer brake evaluation. When the trailer is used in tests of a tractor pursuant to S5.3.1 it will, of course, be connected to the tractor's normal control system.

In addition to specifying the same loading in S6.1.10.7 as in S6.1.10.6, the ratio applied to determine the trailer's stopping distance under S6.1.10.7 has also been revised to conform to that used in S6.1.10.6. To accommodate tractors that are not capable of 60-mph speeds, each section now specifies that the trailer is tested at the speed at which the tractor for which it will be used is tested.

**S6.1.11** and **S6.1.12** These sections relate to special drive conditions and the position of lift-able axles, and are adopted as proposed.

**S6.1.13** This new section was proposed to establish performance requirements for the trailer timing test rig specified in Figure 1. In the

light of objections in the comments to the performance levels specified, the agency is deferring final rulemaking at this time and will issue such changes as it may decide upon with an effective date beyond September 1, 1974.

The tables and figures proposed for adoption or amendment by the notice are adopted as proposed, except for the omission of the parking brake dynamic test from Table I.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 121, *Air brake systems* (49 CFR 571.121), is amended . . . .

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Effective date: September 1, 1974.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on December 20, 1973.

James B. Gregory  
Administrator

**39 F.R. 804**  
**January 3, 1974**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

### Air Brake Systems

(Docket No. 74-10; Notice 2)

This notice amends Standard No. 121, *Air brake systems*, 49 CFR 571.121, in response to several petitions for reconsideration of amendments to the standard published January 3, 1974 (39 F.R. 804), and after consideration of comments on a proposal published March 1, 1974 (39 F.R. 7966). A notice of proposed rulemaking has been issued separately to propose modification of the standard as it applies to trailers.

#### *Reconsideration of Amendments—73-13; Notice 3*

The amendments under reconsideration concern emergency stopping distance requirements for truck tractors, parking brake requirements for trailer converter dollies, recovery requirements for antilock-equipped brakes, a new test condition for loaded truck-tractors, special test conditions for certain drive and axle configuration, and a new burnish condition for road tests. Several manufacturers commented on issues which lie beyond the scope of those amendments and are therefore inappropriate for treatment in this response. Wagner Electric and Midland-Ross' petitions to amend S5.1.2.1 and S5.2.1.2 (Midland also petitioned on S5.1.2.2 and S5.2.1.3) and Wagner's petition to modify Table III retardation values will therefore be considered as petitions for new rulemaking to be answered in a separate notice.

The American Trucking Association (ATA) requested reconsideration of NHTSA's decision to permit either automatic or modulated emergency brake systems as options while further consideration of the modulated system takes place. As stated in Notice 3, the NHTSA has concluded that some aspects of the system may need refinement and that all vehicle manufacturers cannot in any case make all their vehicles conform to modulated brake system requirements

by the standard's effective date. Accordingly, while the majority of the changes proposed in response to the ATA petition continue to be viewed favorably, for the present ATA's petition is denied.

Wagner Electric and General Motors objected to the retention of brake retardation force requirements for towing vehicles as redundant in view of the stopping distance requirements which also apply to them. The NHTSA proposed deletion of these dynamometer requirements previously and, having considered the latest submissions and information, hereby amends S5.4.1 to delete towing vehicles from the standard's requirements. The NHTSA has tentatively concluded that the stopping distance requirements can establish satisfactory brake balance between towed and towing vehicles, and that the cost of dynamometer testing is not justified by corresponding safety benefits. It should be noted that the dynamometer test may be reinstated if experience demonstrates its need.

Fruehauf, in a late submission to this docket and in other docket comments, has emphasized the importance to lateral stability of a slower release time for trailers. A 0.60-sec maximum release time proposed in Notice 1 was not acted on in Notice 3 in the belief that it ran counter to the need for coordination of braking between vehicles in combination, but further study has persuaded this agency that a slightly slower release time for trailers is not detrimental to safe operation of combination vehicles. S5.3.4 has been amended accordingly.

General Motors and the Motor Vehicle Manufacturers Association (MVMA) petitioned for deletion of the 12 lb/in<sup>2</sup> minimum pressure requirement for brakes controlled by an antilock

system. The purpose of the minimum pressure is to eliminate oversensitive brakes because of the difficulty in modulating them. The lower value was established for antilock-controlled brakes on the assumption that a functioning antilock would normally compensate for oversensitivity. A residual value was retained in the event of antilock failure, not to compensate for driver surprise, as assumed by the MVMA, but rather to aid the driver in his efforts to carefully modulate a sensitive brake. The NHTSA has seen no evidence to support the assertions made by MVMA that this requirement could downgrade stopping performance. Except for General Motors' request to clarify antilock "control" in this section, the petitions to amend S5.4.3 are accordingly denied. S5.4.3 is modified to substitute "subject to the control of" in place of "controlled" to make clear that the antilock need not be activated.

General Motors and the MVMA objected to the test condition where a vehicle "is loaded to its gross vehicle weight rating, distributed proportionately to its gross axle weight ratings", arguing that this distribution formula could lead to overload of one or more axles. The General Motors illustration indicates a misunderstanding of the section's wording. The phrase "is loaded to its gross vehicle weight rating" describes a weight condition, that of the fully loaded vehicle, and the provision requires that this weight be distributed in proportion to the gross axle weight ratings. General Motors and the MVMA apparently interpreted the phrase to describe only that portion of the gross vehicle weight rating which "is loaded" on an unloaded truck to bring its weight up to GVWR. The condition states that what is distributed proportionately is the gross vehicle weight *rating* (i.e. the weight of the loaded vehicle), and not just that portion of the rating that constitutes the "load." There is no mathematical possibility of overloading an axle under this condition, since the GVWR must be no more than the sum of the GAWR's.

Ford stated with respect to S6.1.10.5 that "on some vehicles, it may not be possible to adjust the fifth wheel to a position in which the tractor can be loaded to GVWR without exceeding the GAWR of one axle." It may be that Ford's problem arises from the same misunderstanding

described above with respect to GM and MVMA. To the extent, however, that the Ford petition implies that a manufacturer can establish a GVWR for a truck tractor which can not be attained without axle overload, the petition is based on a misconception of GVWR and is therefore denied.

Wagner Electric requested that the loadings in S6.1.10.6 be made uniform with S6.1.10.5 and S6.1.10.7. These loadings are not intended to be uniform, however, because the first condition specifies loading for purposes of truck-tractor testing, while the latter two conditions only establish test equipment specifications for the "control trailer test device" which is used in testing the truck-tractor. S6.1.10.6 and S6.1.10.7 loadings differ so that the service brake and emergency brake capabilities of the control trailer are separately designed to place greater demands on the truck tractor's service braking system than its emergency braking system. The calculations are based on an evaluation of the capacity of the brakes that are expected to be placed on production trailers in accordance with the dynamometer test requirements.

For the benefit of manufacturers who mistakenly consider these test conditions to be minimum performance requirements, it should be emphasized that the S6.1.10.6 and S6.1.10.7 values are conditions, i.e., characteristics of the control trailer test device which must be duplicated as closely as possible for testing. As with any other test device characteristic, to the degree that the control trailer can not produce exactly the right stopping distance, the certifying manufacturer should ascertain conformity of his vehicles under slightly more adverse conditions than those specified, in this case by slightly reducing the trailer brakes' capacity (to stop in the specified distance).

General Motors objected that the lighter control trailer capacities (18,000 and 32,000 pounds in place of 20,000 and 40,000 pounds) specified in the amendment would lower control trailer performance and thereby increase the performance required of truck tractors. The change was made to specify commonly used trailers, to aid manufacturers in meeting the September 1, 1974, effective date. The NHTSA continues to consider the increased availability of test devices to

be more significant to promulgation of a fully satisfactory final rule than the small quantitative change noted by General Motors, and their petition is therefore denied.

General Motors and the MVMA requested specification of test load density to resolve difficulties in establishment of the "worst case" center of gravity height when testing trucks. Specification of a test load density, however, is unnecessary. The manufacturer of a truck or incomplete vehicle should establish the limits of placement of the load center of gravity as a part of his design considerations, to be specified in the Part 568 document for an incomplete vehicle or in his instructions to users in the case of a completed one. This establishes an envelope within which the vehicle is certified to comply with Standard 121 under full load. Once that envelope is established, the appropriate load densities to test the vehicle's conformity can be derived from it.

Several petitions were received with regard to brake burnish procedures. The MVMA and Ford requested reinclusion of language found in the proposal that specified an acceleration procedure for vehicles unable to reach the specified speed in one mile. General Motors submitted minor changes of an editorial nature and new language to specify an increased deceleration rate for vehicles unable to reach the specified speed in one mile. The NHTSA has concluded that language which appeared in the proposal and reflects current SAE procedure should be adopted. The General Motors increased deceleration method represents a new procedure which has not been evaluated by the NHTSA or proposed in any previous rulemaking. The suggestion of 50 snubs before allowing a cooling period is also a new General Motors proposal which the NHTSA has not had the opportunity to evaluate. With the exception of one recommendation, General Motors' editorial suggestions are adopted to be consistent with the titles in Table IV. The word "maximum" was deleted from S6.1.8.1 at the request of several manufacturers because it was inappropriate to the specification of temperature range.

Ford requested the addition of a burnish procedure for parking brakes which do not utilize the service brake components. Language has

been added to specify a burnish procedure for these brakes in accordance with the manufacturer's recommendations.

Two other issues were raised with regard to the road test conditions. To answer Wagner Electric's petition for clarification of S6.1.10.7, the "valve controlling the trailer brakes" may or may not be part of the normal commercial system of the tractor depending on whether or not the normal system can provide the timing specified. The purpose of standardizing timing specifications is simply to remove the tractor's performance as a factor in the test trailer brake evaluation. When the trailer is used in tests of a tractor pursuant to S5.3.1, it will, of course, be connected to the tractor's normal control system.

General Motors questioned the safety benefit of wheel lockup requirements for liftable axles on buses equipped with two non-steerable axles if other axles other than the liftable axle can themselves meet the stopping distance requirements. The agency considers the controlled performance of the liftable axle to be of considerable benefit for added stability under braking conditions other than straight ahead braking required by the standard, and on this basis it denies the GM petition.

In other areas of the standard, General Motors petitioned for longer emergency stopping distances for all vehicles, reasoning that an exception to the values for truck-tractors in an unloaded condition (based on rarity of operation) could be as easily justified for the rare emergency stop situation of any vehicle. The rationale ignores the fact that the emergency values were established in the first place with the rarity of such occurrences in mind, and that the exception is posited on the combined rarity of unladen truck-tractor operation involved in an emergency situation. The problem of testing chassis-cabs can be met by specifying conformity to S5.7.2.3 with a specified weight on the rear axle representing the vehicle body weight. General Motors' petition to apply column 4 values to all vehicle emergency stopping distance requirements is therefore denied.

Wagner Electric petitioned to modify the wording of S5.8 concerning emergency application of trailer converter dolly service brakes so

that the wording would be identical to Bureau of Motor Carrier Safety regulations (49 CFR 393.43). Wagner's proposed wording, however, applies to towing vehicle performance, where the triggering signal is a low, fixed air pressure, and the wording would not be appropriate for trailer performance, where the triggering signal is a venting of the supply line to the atmosphere. The S5.8 language is actually compatible with § 393.43(b), in that BMCS calls for towing vehicles to have an automatic means of activating the emergency features of the trailer air brakes, and S5.8 calls for compatible automatic features on the trailers. Wagner's petition is therefore denied.

General Motors asked whether the S5.4 requirement that brake assemblies meet tests in sequence actually exempts some brakes from all three tests if they are elsewhere exempted from the first. Paragraph S5.4 does not exempt any brake assemblies from any requirement. The brakes on a vehicle which does not have to comply with S5.4.1 must comply with S5.4.2 and S5.4.3.

Several comments requested correction of the omission of the words "in the service brake system" from S5.7.2.3 as published in Notice 3. The omission was inadvertent and has been corrected.

General Motors requested an indication that stopping sequence steps 2 and 3 in Table I apply only to truck-tractors. The steps have been changed to indicate that these steps apply only to truck-tractor testing by means of a control trailer. As for the objection that S6.1.10.7 implies the emergency system of a truck-tractor must control the trailer spring brakes, S6.1.10.7 has been clarified by the addition of a qualifying phrase. S6.1.10.6 and S6.1.10.7 have been further clarified by adding headings to indicate that they are test equipment specifications.

In a separate submission to Docket 73-13, Wagner Electric requested clarification of the trailer test rig timing issue, which had been reserved in Notice 3 as a candidate for adoption at some later date. Midland-Ross also raised the issue with regard to a requested modification of Figure 1. The petitions pointed out that an NHTSA test showing a failure would be inconclusive if it were compared to manufacturer

testing conducted on a faster rig, and showing conformity. The remedy is to specify "legal baseline" actuation and release times, so the manufacturer will know the precise conditions under which his equipment must meet the requirements, and both government and industry testing can be conducted so as to produce conclusive results. The NHTSA therefore establishes the actuation and release values proposed in Notice 1 with minor modification. They will not become effective until September 1, 1975, to maintain the validity of testing already conducted. The values are set at two-significant-figure accuracy in agreement with Wagner that the values should match the actual trailer performance values. Because the actuation time is lowered to 0.06 seconds, the NHTSA may find it necessary to improve its test rig's speed by removing the tractor protection valve. Therefore, the valve has been made optional. The performance of the test device had been modified from the original proposal so that initiating signal points are the same as for the actual performance tests, and so that initial release pressure agrees with the 95-psi requirement of the performance tests.

Other issues raised by Wagner and Midland-Ross in petitions to Notice 3 will be answered in a later notice.

#### *March 1, 1974 Proposals*

The NHTSA proposed modification of the standard's effective date, brake actuation times, and road and dynamometer tests as they apply to the service brake system and emergency stopping performance of all vehicles subject to the standard except trailers (39 F.R. 7966, March 1, 1974). The proposals would have affected vehicle types separately to reflect the particular problems faced by fire fighting vehicles, "special permit" vehicles, on/off-highway vehicles, and standard highway trucks and buses. Manufacturer concern centered on the availability of components to meet the standard by September 1, 1974, and the reliability of the antilock systems which will be utilized by most manufacturers to meet the requirements. Having carefully considered the comments submitted in response to this proposal, the NHTSA hereby delays the standard's effective date for trucks and buses to

March 1, 1975, and establishes interim requirements for particular categories of vehicles essentially as they were proposed.

The limited delay of effective date does not satisfy the requests of Ford and General Motors, who argued for a complete delay of the standard for one year, followed by limited implementation of the standard. Other comments, including those of Chrysler and Rockwell International, asked for significant delays of one year or more based primarily on component shortages which will be discussed separately with regard to the specific problems of separate vehicle types.

Ford argued that the stopping distance requirements mandated high-torque front brakes that could degrade suspension and steering characteristics of some vehicles to an unsafe level. Their submission to the docket and materials submitted in conjunction with a presentation to the NHTSA on March 28, 1974, included evidence of erratic handling and suspension distortion in high- and low-speed spike stops on the proving ground by short wheelbase trucks. The American Trucking Association joined Ford in questioning vehicle handling under the standard's requirements.

Review of the Ford submission indicates that unmanageable suspension problems of this nature are generally encountered in short-wheelbase trucks with suspensions that have not been adequately modified for Standard 121 brakes. Other manufacturers have indicated in some cases that their solution to such severe instability has been a major redesign of the front axle and suspension system, or a decision to withdraw vehicles with especially short wheelbases from their product line. The NHTSA concludes that sufficient lead-time has been made available to all manufacturers to correct the steering and suspension problems of reasonably-designed short-wheelbase vehicles, and that vehicles with wheelbases that are so short, and centers of gravity that are so high, that they cannot stop safely in the stopping distances specified should not be on the highway.

General Motors and other truck manufacturers argued for delay of the standard's effective date for one year to permit additional field testing of the reliability of current antilock devices. The likely effect of such a delay, however, would be

further delay in the availability of production antilock components. One air brake equipment supplier believes "continued development will eventually improve their (antilock systems) overall performance but most of these changes for refinement in electronics, improved pneumatic/electronic response, durability, sensor standardization and design standards require the normal evolution of field experience under real life conditions, using mass produced parts for a genuine field history."

The reliability of antilock systems can presently be judged on the basis of the performance of systems that are already in fleet test programs (and to a lesser extent by evaluation of antilock systems used for many years in passenger cars). One truck manufacturer has reported average miles between failures on fleet testing to be 89,000 miles (176,000 miles in operations within the continental United States). A manufacturer of antilock equipment reported in February 1974 that over 8,000 of its air brake skid control systems are in field use, with excellent reliability experienced. Neither this manufacturer nor any other has reported any highway accident which was attributed to a malfunction of the antilock system.

General Motors included in its list of antilock failures incorrect test procedures, missing fuses, and warning light malfunctions. While these are not insignificant concerns, they are an indication that unfamiliarity with the new system accounts for some of the malfunctions experienced in test programs. In addition, other malfunctions reported by General Motors are believed to be the result of systems being "added on" instead of being designed into the vehicles.

General Motors and Ford reported accidents in their proving ground tests, which they believe illustrate what might happen if an antilock system malfunctions in service. The NHTSA has studied the accident information which was submitted and has concluded that these accidents occurred as a result of rear wheel lockup during panic-type, full brake application and would also have occurred if the vehicles were not equipped with antilock systems. The NHTSA concludes that the reliability of antilock systems is such that their introduction will contribute to motor vehicle safety.

Both the Ford and General Motors recommendations, as well as the other petitions which requested delays substantially greater than those proposed by the NHTSA, are excessively broad in that they would postpone all the safety benefits of the standard, because of specific problems in limited areas. The NHTSA proposal, by comparison, proposes only those modifications which are essential to implement the standard as rapidly and fully as possible.

Because there was only a short interval between the latest proposal and the effective date of the standard in which to implement any modification of the standard, the proposal included a blanket 4-month delay of the standard's effective date for all affected vehicles. International Harvester, the largest manufacturer of air-braked vehicles that commented on the proposal, indicated agreement with the 4-month delay and stated their intention to build vehicles which comply with the standard after that date. General Motors noted the possibility that axles and the larger foundation brakes necessary to meet the standard would be available. The major supplier of axles to the truck and bus industry has estimated that, with no margin for error, some axles could be ready for January 1, 1975. The NHTSA has evaluated the current industrial shortage and leadtime problems precipitated by factors beyond manufacturer control and has concluded that a March 1, 1975, effective date as it applies to powered vehicles is necessary to allow the orderly implementation of Standard No. 121. The NHTSA cannot agree with Blue Bird Body Company that smaller manufacturers should automatically be granted a year to meet the standard following the availability of production components for Standard No. 121.

The NHTSA has also determined that the proposed requirement that the test reservoir pressure reach 60 psi in 0.25 sec cannot be implemented prior to this effective date, and the proposal is therefore withdrawn. The modification of systems to achieve this requirement could negate the compliance test data which has been accumulated by many manufacturers.

Most comments which requested a longer delay of the effective date or more specific relief were addressed to the problems of specific vehicle types. There were no specific comments, how-

ever, on the proposed 1-year delay in the applicability of the standard to fire fighting vehicles. Accordingly, the standard is amended to apply to fire fighting vehicles only after September 1, 1975.

The comments on "special permit" vehicles (defined in the proposal having a 108-inch overall width or a 24,000-pound gross axle weight rating (GAWR), centered on the inadequacy of the definition when applied to "heavy hauler" trailers. Trailers are dealt with in a separate notice of proposed rulemaking published in today's *Federal Register*. The few comments addressed to "special permit" trucks favored the September 1, 1976, effective date, but suggested more time might be necessary to acquire the necessary components because of their low priority in suppliers' engineering programs. At this time the NHTSA amends the standard to grant these vehicles a September 1, 1976, effective date. Any supply problems beyond that will be considered at a later time as they arise.

*On/Off-Highway Vehicles:* Comments on the proposal to substitute dynamometer requirements for stopping distance requirements until September 1, 1975, for trucks that have a front steerable axle with a GAWR of 16,000 pounds or more, or a front steerable drive axle, fell into two groups. Comments either argued that the delay was insufficient, particularly with regard to front steerable drive axles, or they objected to particular aspects of the relaxed interim requirements.

The NHTSA has decided to maintain the September 1, 1975, date for the full stopping distance requirements. An evaluation of all available information in this area indicate that air brake components will be available to meet the required level of performance for vehicles in this category.

Manufacturers raised objections to the proposed interim requirements as they were expressed in S5.3.1.2 and S5.7.2.3.1. Wagner Electric, General Motors, White, and Diamond Reo requested clarification that the S5.3.1.2 requirement would apply to "straight" trucks as well as towing vehicles. The language of S5.3.1.2 makes clear that any trucks in the described category need not meet certain stopping distance

requirements if their brakes conform to the formula in S5.4.1.

Wagner, Mack, and Abex questioned the proposed requirement that the dynamometer values be applied to each axle system separately, instead of being summed for the entire vehicle braking system. The axle-by-axle dynamometer approach was specifically included in the proposal to ensure that brakes would be provided on the front axle and not to minimize braking on the rear axle. Therefore this section is modified to require a certain level of performance for the front axle and a sum total of performance overall. If a specific value were not required for the front axle, manufacturers would be tempted to make minor modifications of present front axle systems and thereby avoid the opportunity to gain experience with the newer, stronger foundation brakes and axles.

The language "the brakes on each wheel" in S5.3.1.2 confused Abex with regard to the dynamometer test requirements. To clarify the requirement while in no way changing it, the wording is amended to "its brakes."

In answer to Wagner's request for a definition of "axle system", the term is used in the same sense as it is used in the definition of GAWR found at 49 CFR § 571.3. "Axle system" is used instead of "axle" to avoid confusion in situations where a suspension system does not employ an axle. The term has not created difficulty in the GAWR definition.

The S5.7.3.2.1 requirement for dynamometer testing in place of emergency stopping performance testing parallels the S5.3.1.2 requirement. General Motors has pointed out, however, that dynamometer testing of spring brakes often found in emergency brake systems is impracticable. Wagner also points out that the requirement can be viewed as redundant in view of S5.3.1.2. In view of these objections, the NHTSA concludes that retention of the emergency stopping requirement (except for the stopping distance) would be preferable to a dynamometer requirement. For the interim period, therefore, the vehicle will be required to come to a stop within the 12 foot lane using its emergency braking system.

*Highway Trucks and Buses:* For powered vehicles that do not fall in the categories treated above, the proposal would have lengthened stopping distance requirements 5 percent to compensate for the variations expected in early production components that affect stopping performance. Most manufacturers argued that the 5 percent longer distances would be required for the indefinite future, because production variations would continue to affect performance significantly. The NHTSA established the stopping distances on the basis of the ability of available equipment, and expects that experience in the production of these components will lead to predictable quality and the assurance that a vehicle will in fact perform as well as it is designed to.

White Motor Company suggested a clarification of S5.3.1.3 and S5.7.2.3.2 to make clear that the test procedures for the proposed Table V stops are identical to those in S5.3.1 for the Table III stops. The change has been made without in any way changing the requirements.

*Other Issues:* Two proposals which affected most trucks and buses were the brake actuation time of 0.35 sec and the option of a manual pressure reduction valve to limit air pressure to the front axle. Nearly all manufacturers supported the 0.35-sec actuation time for trucks and buses and requested that it also be extended to trailers. The NHTSA amends the standard as proposed for truck and bus brake actuation. Trailer brake actuation requirements will not be changed, however, in light of the imminence of the effective date and the consequent need for stability in the standard.

The manual pressure reduction valve proposal was not supported as expected. Even Ford and General Motors, who questioned the safety of high-torque front brakes, did not agree that the valve would have a positive safety benefit. In view of the sharp disagreement in the comments over the usefulness of the valve in the hands of different drivers, the proposal is withdrawn.

In the course of their comments on the proposal, several manufacturers and suppliers indicated uneasiness about the policy of the NHTSA with regard to isolated failures of components that have been certified as complying with Standard No. 121. Some comments expressed a belief

Effective: September 1, 1974  
March 1, 1975

that the NHTSA was adopting or announcing a new policy regarding compliance, with reference to a panel discussion at the February 25, 1974, meeting of the SAE in Detroit. The remarks in question, by an NHTSA Assistant Chief Counsel, were to the effect that the agency expects that each manufacturer will design his vehicles and his test program so as to constitute due care that each of his vehicles complies with the standard. That is not a new policy, however, but merely a statement of the requirements of the National Traffic and Motor Vehicle Safety Act, which has been followed continuously by this agency. The NHTSA has avoided a rigid position that each failure necessarily constitutes a violation of the Act, just as it has the position that some percentage of failures is automatically "allowable." What constitutes due care in a particular case depends on all relevant facts, including such things as the time to elapse before a new effective date, the availability of test equipment, the limitations of current technology,

and above all the diligence evidenced by the manufacturer.

All interested persons should note that, although a proposal was necessary with regard to changes for trailer manufacture, the NHTSA does not intend to make any other amendments of Standard 121 before its effective date.

In consideration of the foregoing, Standard No. 121 (49 CFR 571.121) is amended. . . .

*Effective Date:* September 1, 1974, for trailers;  
March 1, 1975, for trucks and buses.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718;  
15 U.S.C. 1392, 1407; delegation of authority at  
49 CFR 1.51.)

Issued on May 14, 1974.

James B. Gregory  
Administrator

**39 F.R. 17550**  
**May 17, 1974**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121****Air Brake Systems****(Docket No. 74-10; Notice 4)**

This notice amends Standard No. 121, *Air brake systems*, 49 CFR 571.121, to delay the effective date of the standard as it applies to air brake-equipped trailers until January 1, 1975.

The January 1, 1975, effective date was proposed in a notice published May 17, 1974 (39 F.R. 17563) which invited comments on the proposal until June 17, 1974. On the basis of urgent requests by manufacturers and the Truck Trailer Manufacturers Association, a new comment closing date of June 4, 1974, was established for the effective date issue (39 F.R. 18664, May 29, 1974). The separate issue of a new "heavy hauler trailer" category is still subject to the June 17 date for comments, and further action will be decided on after that date.

Only three commenters, out of the fifty who responded, opposed the 4-month postponement. These three were suppliers to the trailer industry who claimed that they were ready to provide the needed components by September 1, 1974,

and stated that a delay in the effective day would entail additional costs to them. The NHTSA finds, however, that the September 1, 1974, date does not provide sufficient time for an orderly transition to production of the trailers with the new components, and that a delay until January 1, 1975, is therefore in the interest of motor vehicle safety.

In consideration of the foregoing, the effective date of Standard No. 121 (49 CFR 571.121) is changed from September 1, 1974, to January 1, 1975, as it applies to trailers.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on June 6, 1974.

Robert L. Carter  
Acting Administrator

**39 F.R. 20380**  
**June 10, 1974**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

### Air Brake Systems

(Docket No. 74-10; Notice 5)

This notice amends Standard No. 121, *Air brake systems*, 49 CFR 571.121, to delay the effective date for a category of specialized trailers whose configuration makes compliance with the standard particularly difficult until September 1, 1976. A new definition is added to the standard to define the specialized "heavy hauler trailer" category.

The definition and effective date were proposed in a notice published May 17, 1974 (39 F.R. 17563). The proposed definition read:

"Heavy hauler trailer" means a trailer with one or more of the following characteristics:

- (1) Its brake lines are designed to adapt to separation or extension of the vehicle frame; or
- (2) Its body consists of a platform whose primary cargo-carrying surface is not more than 40 inches above the ground in an unloaded condition.

None of the comments directly addressed to specialized trailers objected to the 1976 date.

Wagner Electric suggested that the definition could be misconstrued to include trailers with bodies that consist of a cargo-carrying surface and sides and a header. It does appear that the definition can be more specifically stated, permitting only a header for safety purposes, and sides of a temporary nature. The definition has been modified accordingly.

Some comments recommended broadening the reach of the definition to higher trailers. Nabors suggested a specific exemption for pole trailers. Kornylak requested exemption of its Stradolift vehicle, and Bankhead requested exemption of auto-hauling trailers.

The suggestions to expand the definition to specific trailer types would broaden the exemp-

tion beyond what is necessary to implement the standard. The definition presently reflects the necessary design characteristics of specialized trailers which, as a whole, require more development before they can comply with the standard. Hauling automobiles, for example, does not require 15-inch wheels. A pole trailer which is not extendable does not require longer brake actuation and release times than the standard highway van.

Other comments recommended raising the 40-inch bed limit to accommodate more vehicles. The NHTSA has concluded that trailers with beds higher than 40 inches (including trailers whose beds are below 40 inches over the wheels but higher than 40 inches over the fifth wheel) can accommodate the new larger brake packages available at this time.

In consideration of the foregoing, Standard No. 121 (49 CFR § 571.121) is amended by a modification of the paragraph on the applicability of the standard and by the addition of a new definition. . . .

*Effective date:* January 1, 1975. It is found that this amendment causes no additional burden to manufacturers and, because the general effective date of the standard for all trailers is January 1, 1975, this delay of effective date for certain trailers must be effective sooner than 180 days of issuance and no later than January 1, 1975.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on July 30, 1974.

James B. Gregory  
Administrator  
**39 F.R. 28161**  
**August 5, 1974**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121****Air Brake Systems****(Docket No. 74-10; Notice 6)**

This notice responds to six petitions for reconsideration of recent amendments to Standard No. 121, *Air brake systems*, 49 CFR 571.121, which established a March 1, 1975, effective date for trucks and buses, and optional interim requirements until September 1, 1975, for trucks with certain heavy or front steerable drive axles. In addition, this notice also responds to several questions on the burnish procedure recently raised by International Harvester.

The NHTSA established the March 1, 1975, effective date for trucks and buses after comprehensive consideration of numerous petitions from manufacturers and users of air brake-equipped vehicles (39 F.R. 17550, May 17, 1974). Manufacturer concerns centered on the availability and reliability of components involved in the new brake systems, particularly antilock devices, and on leadtime necessary to modify vehicles to accept these components.

Ford Motor Company is the only manufacturer of air brake-equipped trucks which petitioned for reconsideration of the March 1, 1975, implementation date for the standard's basic provisions. After the time for petitions for reconsideration had closed, Chrysler Corporation reported on an accident which occurred during certification testing of a vehicle equipped with antilock devices, and urged the delay of Standard No. 121 for an indefinite period. The American Institute of Merchant Shipping also requested an indefinite delay in the standard's implementation.

Ford petitioned for a further 6-month delay in the standard as it applies to truck-tractors, and a one and one-half year delay as the standard applies to other trucks and buses. Ford asserts that the suspension and brake modifica-

tions necessary to meet the dry-stopping distance requirements will compromise vehicle handling and stability, increase the danger of load shifts, and force the introduction of antilock devices before Ford considers them reliable. The requested extension would be used to evaluate the effect of the new componentry on overall safety.

The issues in the Ford petition have been carefully considered by the NHTSA in the process of rulemaking and, with the exception of load shifting, were addressed in the preamble to the amendments which established the March 1, 1975, date. The NHTSA has reviewed each of Ford's concerns, and concludes that implementation of the standard as scheduled for trucks and buses is reasonable, practicable, and meets the need for motor vehicle safety.

With regard to the handling and stability problems experienced by some short-wheel-based vehicles in meeting the stopping distance requirements, the NHTSA maintains its determination that adequate time has been made available to make the major redesign necessary in some vehicles, or to make the decision to discontinue the production of models which are simply too short to meet the requirements despite design changes. International Harvester, in its comments on the rulemaking, indicated that it had been ready to meet the proposed January 1, 1975, effective date and would actually suffer economic losses in waiting for the March 1, 1975, implementation.

The availability and reliability of antilock systems which will be used by many manufacturers in meeting the requirements was questioned by Ford in its petition. In response to Ford's assertion that a manufacturer's report on field experience with 8,000 antilock units does

not appear in the record, a letter from Kelsey-Hayes (February 1, 1974) containing this information was placed in the NHTSA Docket Section before March 1, 1974. The NHTSA continues to monitor antilock production and testing and cannot agree that the evidence indicates antilocks will decrease the safety of the new trucks in highway operation. Since May, the NHTSA engineering staff has visited six of the seven major antilock manufacturers to discuss antilock reliability and availability. At least half of these manufacturers pointed out that their plants were prepared for full production to meet the September 1, 1974, date, and that they had had to delay production schedules because of the six-month delay. Low volume production is presently available to vehicle manufacturers for their testing and evaluation.

Concerning antilock reliability, a substantial amount of proprietary information was reviewed as well as the publicly-known information that no highway accident has been attributed to the failure of antilock devices. Kelsey-Hayes pointed out that it is selling approximately 250 axle units each month for retrofit. Following these visits, the NHTSA sent the seven major antilock manufacturers requests for reliability data under its investigatory authority, which will become part of the record although it may be of a proprietary nature which would justify not making it public. This data will show millions of axle miles of antilock operation with a malfunction rate comparable to other equipment presently in highway service, and no highway accidents attributable to the device.

Chrysler Corporation reported on a proving-ground accident on May 16, 1974, in which an antilock-equipped truck rolled over after its rear wheels locked and caused skidding during a stop from 60 mph. The manufacturer of the antilock system reported that the device functioned as it was designed to but in response to a false signal. The important point, however, as noted in the May rulemaking, is that the accident occurred as a result of rear-wheel lockup during a panic-type, full brake application that would also have occurred if the vehicle had not been equipped with antilock. In other words, a panic stop always involves the risk of uncontrolled skid due

to lockup, and the presence of the antilock only improves the chances of a safe stop in the vast majority of instances in which it functions properly.

Ford requested an interpretation of S5.5.1 of the standard that would permit use of a pressure limiting valve to the front axle that operates when it senses electrical failure of the antilock system. The NHTSA has advised Ford (and Bendix Corporation) that S5.5.1 does not prohibit use of such a valve designed to operate in the event of electrical failure.

Ford also raised the problem of load shift under heavy braking. The NHTSA has considered the effects of the standard and notes that, under normal circumstances, stops will continue to be made at the same deceleration as in the past, consistent with driver comfort and load stability. Only in emergency situations will the full torque of the new brakes be utilized and in this event, the NHTSA concludes that the shorter stopping distances outweigh the possible safety problem of load shift.

The Ford petition pointed out that any failure of component manufacturers to supply the new 121 components would make compliance with the standard impossible. As of this date the NHTSA finds that supplier production is on schedule and will provide components on time. As recently as July 26, 1974, Rockwell International assured the NHTSA that its production is on schedule.

For these reasons the Ford petition and Chrysler request are denied. The NHTSA would like to establish the issuance of this notice as the final form of Standard No. 121 with regard to its effective date and the stopping distance requirements, for purposes of review under § 105(a)(1) of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. § 1394). Thus, while several areas treated later in this notice will be subject to further reconsideration, the effective dates and stopping distance requirements will be final as to any person who will be adversely affected by them.

While International Harvester supported the March 1, 1975, date for standard highway trucks and buses (it would have preferred a January 1,

1975, date), they did petition for reconsideration of the NHTSA decision to apply the full stopping distances to vehicles equipped with front steerable drive axles after September 1, 1975. White Motor Company and Diamond Reo Trucks, Inc., also petitioned for 1 year's delay in implementation of the full requirements for these axles.

The majority of front steerable drive axles are found on vehicles which use the road regularly at highway speeds and which require the same stopping capability as lighter vehicles. In most cases, their non-planetary construction permits an uncomplicated adaptation to the standard's torque requirements. Furthermore, one vehicle manufacturer indicates that it has successfully redesigned steerable drive axles in the 18,000- to 23,000-pound GAWR range to meet Standard No. 121. White, International Harvester, and Diamond Reo state that the lighter axles in this category are unavailable, but not technically unfeasible. The unavailability stems from supplier decisions to concentrate on the more common non-driving axles found on standard highway vehicles in great numbers. An August 8, 1974, letter from Rockwell Standard to Docket 74-10 supports the conclusion that the axles can be manufactured, but will not be available until September 1, 1976. Accordingly, the NHTSA has reconsidered the present effective date of September 1, 1975, for full requirements applicable to front steerable drive axles and delays for one year the full requirements for those axle sizes which are not available until September 1, 1976.

Diamond Reo and White also requested reconsideration of the implementation of full requirements for vehicles equipped with a front steerable non-driving axle with a GAWR of 16,000 pounds or more, which are subject to interim dynamometer requirements from March 1, 1975, to September 1, 1975. The manufacturers base their requests for a 1-year delay on difficulties in securing a proven brake assembly capable of handling the higher torque levels. B. F. Goodrich recently dropped development of its heavy air-over-hydraulic disc brake system, to which at least one truck manufacturer, White Trucks, was committed. White states that disc brakes are

necessary for heavy front axles and has encountered severe axle-to-axle imbalance problems in its attempts to use other disc brake assemblies at this date. A major axle supplier has notified the NHTSA that the axle itself can be ready by September 1975.

The NHTSA has evaluated the foundation brake assemblies available to this vehicle group and concludes that a year's field testing and experience is necessary and desirable to assure that the new components will perform as designed when placed in highway service. For this reason the full requirements of Standard No. 121 will become effective for vehicles with a front steerable axle of 16,000 pounds GAWR or more on September 1, 1976.

With regard to this vehicle group, International Harvester claimed that the requirement that the brakes be "fully applied" was unfairly introduced into the interim requirements and interferes with braking action. Apparently full pressure applications may cause erratic behavior in some large vehicles with very light bodies, during dry stops in the unloaded condition.

Full application is required to ensure that vehicles provide the lateral tractive capability of an unlocked wheel during panic braking. This interim requirement was proposed in March 1974 as relief from full requirements which have been in effect since February 1971. The NHTSA does not consider it unfair to propose and make final an optional stopping requirement which represents relief from more stringent requirements. More important, the NHTSA considers it crucial to maintain complete directional stability in a panic stop, loaded or unloaded, if the vehicle is unable to meet the stopping distance requirements in that condition. Accordingly, the International Harvester petition is denied.

Diamond Reo also requested that the interim stopping distances for standard highway vehicles be adopted as the full requirements. Their vehicles meet the shorter distances but not by a sufficient margin to absolutely assure them that every one of their vehicles will pass. The fact that the vehicles are capable of stopping well within the shorter distances persuades the NHTSA that this safety level can and should

be maintained. Manufacturers are required by the Safety Act to "exercise due care" in certifying that vehicles comply with the applicable standards (15 U.S.C. § 1397(b)(2)). In view of the statutory language, Diamond Reo's request for reconsideration is denied.

In a related matter, the NHTSA has been asked by the *Federal Register* to redesignate the present Table V as Table IIa, which is accomplished in this notice.

Manufacturers raised several matters which were not addressed by Notice 2 and are not, therefore, properly raised as petitions for reconsideration. The NHTSA finds it desirable, however, to respond to them in this notice, in view of the standard's imminent effective date.

Most important was a question by International Harvester in a July 27, 1974, visit by NHTSA engineers to their plant. They indicated that some 121 vehicles may have difficulty in achieving the required burnish temperatures because of the use of the automatic pressure limiting valve that tailors the torque at the front axle. The burnish conditions of Standard No. 121 essentially standardize the preparation of new truck, bus, and trailer brakes for testing under the standard.

In the absence of a specification for these valves, it appears that manufacturers have instituted various practices to assure uniformly good burnishes. It is apparent that different vehicles respond to the burnish procedure with distinctive problems and require solutions tailored to their particular brake packages.

From a regulatory standpoint, however, an optional procedure complicates enforcement of a standard, particularly where a manufacturer has tested one way and the NHTSA tests the other. Test results with the limiting valve, for example, may not be easily comparable with test results in which the valve was bypassed. Both the manufacturer and the NHTSA need a specification that permits flexibility in achieving a uniform burnish in different vehicles, but does not permit two burnish options.

To end this confusion, the NHTSA further specifies the burnish procedure to require that a limiting valve be in use except in the event the temperature of the hottest brake on a rear axle

exceeds the temperature of the hottest brake on the front axle by 125° F. In this way the manufacturer and the NHTSA will follow the same test procedure. It should be emphasized that this specification in no way invalidates the testing undertaken to date. Such data can be the basis of certification.

In answer to another International Harvester question, brake adjustments can be made during the burnishing to control brake temperatures. It should be noted that NHTSA is considering a limit on adjustments to three, to be made only during the first 250 snubs. Finally, the NHTSA has indicated to Kelsey-Hayes that it would add "after-stop" to the burnish procedures to describe the specified temperatures more precisely. The NHTSA intends to measure the temperatures within 30 seconds of brake release, but will not reject manufacturer readings taken at any time if they are reasonably related to the temperatures actually generated by the snubs. This latitude is necessary to avoid invalidation of manufacturer testing up to this time.

International Harvester asked that the parking brake requirements of S5.6.2 be modified to require 20 percent grade holding ability "to the limit of traction". The NHTSA has determined that the present grade holding capability is desirable, and it has already provided an alternative requirement in the standard that brakes with a specified static retardation force be provided on all axles. The NHTSA concludes that the option makes a reduction of the grade-holding requirements unnecessary.

Diamond Reo requested that air reservoir volume on trucks and buses be reduced from present requirements. The NHTSA has already reduced the volume from 16 times the combined service brake chamber volumes to 12 times that volume, and concludes that a further reduction is not in the interests of motor vehicle safety. The Diamond Reo request concerning the anti-lock electrical circuit has already been answered by a letter denial of June 28, 1974.

Wagner Electric requested a minor revision of Figure 1, Trailer Test Rig, which the NHTSA makes in the interests of consistency of terminology. The word "control" is substituted for "pedal".

Finally, the NHTSA has been receiving some indications that manufacturers may arbitrarily specify a higher GAWR than normal simply to avoid requirements of the standard. The NHTSA therefore takes this opportunity to explain the manufacturer's responsibility to specify the GAWR of axle systems on his products.

The NHTSA defines gross axle weight rating as follows:

"Gross axle weight rating" or "GAWR" means the value specified by the manufacturer as the load-carrying capacity of a single axle system, as measured at the tire-ground interfaces.

Because the GAWR is measured at the tire-ground interfaces, it means that the tires, wheels, brakes, and suspension components are included in the determination. It is obvious that the GAWR of the whole system cannot exceed the rating of any one component, such as tires. Both the NHTSA in its compliance tests and defects investigations, and the Bureau of Motor Carrier Safety on the road, will judge the vehicle on the

basis of the values assigned. Therefore it is in the interest of the manufacturer to assign values which accurately reflect the load-bearing ability of the vehicle and its tires and suspension.

In consideration of the foregoing, Standard No. 121 (49 CFR 571.121) is amended. . . .

*Effective date:* March 1, 1975. Because the Standard's effective date for trucks and buses occurs sooner than 180 days and because these amendments create no additional burden, it is found for good cause shown that an earlier effective date than 180 days from the date of publication is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on November 6, 1974.

James B. Gregory  
Administrator

**39 F.R. 39880**  
**November 12, 1974**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

### Air Brake Systems

(Docket No. 74-10; Notice 11)

This notice amends Standard No. 121, *Air brake systems*, 49 CFR 571.212, to establish a new test category (and an effective date) for highly specialized tractor-trailer vehicle combinations, and to specify modified brake retardation force requirements for trailers until September 1, 1976.

The National Highway Traffic Safety Administration (NHTSA) proposed these actions, along with other actions that deal with specialized trucks, in a notice published November 14, 1974 (39 F.R. 40168). The NHTSA is acting as soon as possible on the retardation force and integral tractor-trailer issues because they directly affect the manufacture of trailers, which will be subject to the standard's requirements on January 1, 1975. The issue of exemption for over-size and specialized trucks (which have a March 1, 1975, effective date) will be addressed in the near future by a separate notice.

The NHTSA takes note of its recent proposal and request for comments on a postponement of this standard (39 F.R. 43639, December 17, 1974). The NHTSA is proceeding with this rulemaking action independently of that proposal to maintain as much continuity as possible in the regulation as presently issued.

The manufacturers and users of auto transporter combination vehicles and the Truck Trailer Manufacturers Association supported the proposal to exempt "integral tractor-trailers" from applicability of the standard until September 1, 1976, because of their particular testing difficulties. It has been suggested that the term "integral tractor-trailer" should be replaced by a more descriptive designation of the combination vehicles in question. The NHTSA agrees and modifies the definition to refer to the transportation of motor vehicles, and to change the defined

term to "auto transporters." The comments requested deletion of a requirement in the definition which limited these vehicles to those designed "by a single manufacturer, or person who alters a certified vehicle." The comments expressed concern that the phrase would eliminate the manufacture of tractor and trailer portions separately. Some manufacturers also believed that the reference to "certified vehicles" meant that any incomplete truck tractor equipped with 121-type equipment would have to be certified upon completion by the manufacturer of auto transporters.

The cited requirement does not exclude manufacture by separate individuals of the two portions of the combination, although the preamble inadvertently referred to "trucks and trailers manufactured by a single manufacturer for use in combination." It is possible that one or more persons other than a vehicle manufacturer or alterer may be responsible for the integral design. The NHTSA therefore deletes the phrase in question to permit continued flexibility in the design of these vehicles.

The reference to alteration of a "certified vehicle" confused some businesses which modify stock truck-tractors for use in auto transporters. They believed that a completed vehicle that had been certified to meet Standard No. 121, or an incomplete vehicle with documents referring to Standard No. 121, could not qualify for an exemption as a portion of an auto transporter. In actuality, a complete and certified vehicle, or an incomplete vehicle, can be modified to become a portion of an auto transporter, which would thereby qualify for exemption whatever its previous status.

Bankhead Transportation requested clarification with regard to manufacture of new auto transporter trailers to be fitted to existing truck tractors that are modified to accept the new trailer. These trailers constitute a portion of an auto transporter and as such are exempt until September 1, 1976. The NHTSA has modified the language of S5.3 in one respect from that proposed, to make clear that a transporter trailer manufactured without an equivalent transporter tractor would be tested separately under the requirements of S5.3.2 after September 1, 1976.

The NHTSA also proposed that the retardation force requirements of the standard, which apply to trailers (and, of an optional basis, to a small category of large trucks until September 1, 1967), be somewhat reduced because of the degree of variability being experienced in brake lining performance. The NHTSA requested comments on lower values and on whether such new values should be permanent, or only temporary while further information is developed on variability.

With the exception of General Motors Corporation and Automotive Research Associates, Incorporated (which suggested changes in dynamometer procedures instead of values), the commentators supported the reduction of retardation force values for trailers. General Motors argued that brake force reductions of the trailer should not be undertaken without similar reductions in stopping distance requirements for trucks, and is particular towing vehicles.

The NHTSA, in an amendment published May 17, 1974 (39 F.R. 17750), has already acknowledged the variability of production brake assemblies on trucks and buses by establishing longer stopping distances for an interim period until September 1, 1975. The NHTSA recently denied a petition by Diamond Reo to make these longer distances the permanent values of the standard (39 F.R. 39880). A Paccar Corporation petition presently under consideration on the subject of stopping distances also raises the issue of relaxed stopping requirements. The NHTSA concludes that its decision on that petition will be responsive to the points raised by General Motors.

Several comments on the proposed lower retardation forces included data that further substantiate the determination that variability of

brake linings is not sufficiently small to permit 100 percent compliance of every brake assembly at the present values. Wagner Electric Corporation, which originally petitioned for use of the values proposed by the NHTSA, has submitted new data which support a slightly lower minimum force level to support the desired mean performance of approximately 60 pounds. Data supplied by Raybestos Manhattan demonstrate a variability to the 3-sigma limit of slightly more than 20 percent calculated by the NHTSA on earlier testing. Molded Materials Company disagreed that compatibility of combination vehicles required 60 percent mean retardation values, but supported the proposed lower minimum force levels as a means to achieve compatibility. Abex Corporation supported the lower values so that actual production experience could be accumulated as a basis for future changes.

The NHTSA concludes on the basis of submitted data that values slightly lower than those proposed will better accommodate the demonstrated variability of brake lining material. Therefore, values of 0.06, 0.13, 0.20, 0.27, 0.34, 0.41, and 0.47 will replace the present values for trailers.

Manufacturers and users of brake lining differed on whether the new values should permanently replace the previous values. The NHTSA did not receive conclusive information indicating that the variability in performance will remain in production units. The NHTSA concludes, therefore, that interim values will permit the accumulation of significant field experience on vehicle compatibility and lining variability, and that a judgment will be made on the basis of that data in the future.

Only Kelsey-Hayes commented on the proposal to apply these new retardation force values to trucks with heavy (or driving) front axles during their interim requirements. As a manufacturer of front axle brake assemblies for this vehicle category, Kelsey-Hayes pointed out that the revision was not supported for truck front axle brake assemblies and would require an unjustified retooling for a period of no more than 18 months. The NHTSA agrees that the data underlying the proposal supports a modification for trailer brake assemblies only. Accordingly,

the NHTSA does not reduce the optional interim retardation force requirements for trucks specified in S5.1.3.2.

In a separate matter, Rockwell International Corporation asked whether the discussion of 100 percent compliance with Standard No. 121's retardation force requirements was a modification of earlier NHTSA discussion on the "due care" responsibility of each manufacturer to ensure that each of his products meets the requirements of the standard (39 F.R. 17750, May 17, 1974). The requirement to exercise "due care" that each vehicle comply with Standard No. 121 is a statutory requirement (15 U.S.C. 1397), and the above-cited discussion remains the NHTSA position.

In consideration of the foregoing, Standard No. 121 (49 C.F.R. 571.121) is amended. . . .

*Effective date:* January 1, 1975. Because of the imminent effective date of the standard for trailers (January 1, 1975), the National Highway Traffic Safety Administration finds, for good cause shown, that an effective date sooner than 30 days is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 C.F.R. 1.51)

Issued on December 31, 1974.

James B. Gregory  
Administrator

**40 F.R. 1246**  
**January 7, 1975**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

(Docket No. 74-10; Notice 12)

### Air Brake Systems

This notice amends Standard No. 121, *Air brake systems*, 49 C.F.R. 571.121, to delete as of September 1, 1976, the emergency brake option that for trucks and buses permits automatic application of the parking brakes in place of a modulated emergency brake system. A notice of proposed rulemaking to be issued shortly proposes modification of the air brake system parking brake requirements and the trailer emergency braking requirements.

Based on a December 1972 petition from the American Trucking Associations (ATA), the NHTSA proposed elimination of the automatic parking brake for use as an emergency braking capability (38 F.R. 14963, June 7, 1973). In response to comments on that proposal which stated that leadtime was insufficient to implement the proposal by September 1, 1974, the NHTSA indicated it would defer final action to a later date and issue any changes with an effective date beyond September 1, 1974 (39 F.R. 804, January 3, 1974). The NHTSA again indicated in May 1974 that "the majority of the changes proposed in response to the ATA petition continue to be viewed favorably." (39 F.R. 17550, May 17, 1974). The NHTSA has now completed its consideration of the modulated braking provision and hereby amends the standard as proposed in June 1973, with an effective date of September 1, 1976, to permit adequate time for engineering necessary changes. It appears, in fact, that the majority of new brake systems are designed to meet generally the modulated emergency brake requirements.

The fundamental change is elimination of the option that permits automatic application of the parking brakes in place of a modulated emergency brake system. The NHTSA agrees with

the ATA that a driver should not be forced to use two different methods of applying the emergency brakes, depending on what vehicle he is driving at the time.

In the parking brake system proposal to be published shortly, it is proposed that the parking brake provisions found as options in the present S5.7 be made mandatory in a revised S5.6 parking brake section. Thus the present S5.7 requirement that a vehicle with a modulated brake capability also have a parking brake capable of manual application at any service reservoir pressure level would be found in the parking brake section. Also the requirement that the parking brake be capable of application in the event of a failure of specific components common to the service brake and emergency braking systems would be moved to the revised parking brake section. Finally the requirement that a parking brake be releasable only if it can be reapplied would be found in the new parking brake provisions.

Several other requirements proposed in June 1973 for the modulated emergency brake system are found in this amendment. The modulated emergency brake must be applied, released, and be capable of modulation, by means of the service brake control. The NHTSA has concluded that the driver is most likely to maintain the best control of his vehicle when he can modulate any braking available to him through a single control. The emergency system must be capable of two full applications and releases in the event the service brake system fails. This ensures that a disabled vehicle can be safely moved off the roadway.

As proposed in June 1973 and made final in this notice, the emergency brake system of a

towing vehicle must operate in the event the trailer air control line or the trailer supply and control lines fail. These requirements ensure that a loaded combination vehicle can stop in specified distances with a failed control line, and that a loaded straight truck (capable of towing) or "bobtail" tractor-trailer is capable of stopping in the event a trailer breaks away. Additionally, the service brake control of a towing vehicle must be capable of modulating the brakes on a towed vehicle following a failure on the towing vehicle. Also, the emergency stopping distance requirement presently in the standard becomes the only permissible test of a truck or bus emergency braking system.

A new test condition has been added to specify when to vent the control and supply lines to atmosphere for test purposes.

As noted above, the majority of these changes appear to be incorporated in large measure in the design of the new brake systems. The NHTSA concludes that truck and bus manufacturers are capable of meeting these modulated brake requirements by September 1, 1976.

In consideration of the foregoing, Standard No. 121 (49 C.F.R. 571.121) is amended. . . .

*Effective date:* September 1, 1976.

(Sec. 103, 119 Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407), delegation of authority at 49 C.F.R. 1.51 and 49 C.F.R. 501.8).

Issued on January 10, 1975.

James B. Gregory  
Administrator

**40 F.R. 2989**  
**January 17, 1975**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

### Air Brake Systems

(Docket No. 74-10; Notice 14)

This notice amends Standard No. 121, *Air brake systems*, 49 C.F.R. 571.121, to exempt a small category of oversize and construction vehicles from the applicability of the standard. The exemption criteria were proposed in a January 28, 1975, notice (40 F.R. 4153), which expanded the criteria for this specialized vehicle category in response to comments on an earlier exemption proposal (39 F.R. 40168, November 14, 1974).

In making the proposal, the NHTSA tentatively determined that the specialized configuration of this small category makes compliance with the standard so difficult and expensive that an exemption from the standard would be justified. It was noted that the vehicle function in these cases generally results in restricted operation on the highway (e.g., at low speed, in permit operation, or during daylight hours) and that as a result, vehicle exposure on the highway is limited.

The NHTSA proposed a series of criteria intended to comprehensively identify vehicles with these characteristics. Permanent exemption would be granted to any vehicle that has (1) an overall vehicle width of 108 inches or more, (2) a speed attainable in two miles of not more than 33 mph, (3) a speed attainable in two miles of not more than 45 mph, all-wheel drive, and no cargo- or passenger-carrying capacity, (4) an axle that has a GAWR of 29,000 pounds or more, (5) two or more front steerable axles with a GAWR of 16,000 pounds or more for each axle; or (6) a steerable drive axle driven through gear reduction contained within the wheel.

Three of the numbered criteria ((3), (5), and (6)) were intended to describe the lighter and more maneuverable vehicles whose drive axle con-

figuration or high center of gravity make conformity with the standard expensive and difficult. An example of this vehicle type is the large, carrier-mounted mobile crane. Based on submitted comments, it appears that these criteria should be combined as a single compound criterion in order to avoid inequities in the applicability of the standard. Specifically, either of the criteria numbered (5) or (6) could, of itself, permit heavy or cargo-carrying vehicles on the highway at unlimited speed without 121-type brakes while far smaller vehicles would be subject to the regulation. To accomplish the rearrangement, the exception criteria numbered (3), (5), and (6) are combined in a new category (d) to require for this exception that an expected vehicle have a speed attainable in two miles of not more than 45 mph, no cargo- or passenger-carrying capacity, and either (1) all-wheel drive, (2) a steerable drive axle driven through gear reduction contained within the wheel, or (3) two or more front steerable axles.

It is recognized that total withdrawal of the 16,000-pound tandem steerable axle exemption would make those vehicles with an unlimited highway speed unavailable until the axles are developed or the vehicle speed is reduced to 45 mph. Therefore the NHTSA will make final its proposed 16,000-pound exemption, but only for the interim period until September 1, 1976.

With regard to the 45-mph maximum speed criterion, FMC Corporation suggested that the speed be raised somewhat to ensure that vehicles excepted on this criterion can use the interstate highway system. The NHTSA does not agree that it should encourage use on the interstate system of large, high-center-of-gravity vehicles that are not subject to a minimum braking standard. Accordingly, FMC's request is denied.

Little comment was received on the other criteria. Ford Motor Company suggested a 24,000-pound figure in place of the 29,000-pound proposal. For reasons cited in the January proposal in response to an identical request by Mack this request is denied.

To the degree that this amendment does not grant the requests for exemption raised by Marmon Transmotive in its December 23, 1974, letter to the Administrator, that petition is denied.

In consideration of the foregoing, Standard No. 121 (49 C.F.R. 571.121) is amended. . . .

*Effective date:* March 1, 1975. Because these amendments relieve a restriction and because of

the imminence of the standard's effective date, it is found for good cause shown that an effective date sooner than 30 days from the date of their publication in the *Federal Register* is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 C.F.R. 1.51.)

Issued on February 28, 1975.

James B. Gregory  
Administrator

**40 F.R. 8953**  
**March 4, 1975**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121

### Air Brake Systems

(Docket No. 74-10; Notice 15)

This notice amends Standard No. 121, *Air brake systems*, 49 C.F.R. § 571.121, in response to petitions for reconsideration of requirements established for trucks and buses, by revision of the retardation force requirements applicable to on/off highway vehicles until September 1, 1975, or September 1, 1976.

The National Highway Traffic Safety Administration (NHTSA) established the final form of Standard No. 121 for purposes of judicial review in November 1974 (39 F.R. 39880, November 21, 1974) (Notice 6). Notice 6 established interim stopping distance requirements for standard highway vehicles, and retardation force requirements for some on/off highway vehicles. Petitions for reconsideration of the decision were received from White Motor Corporation, Mack Trucks, International Harvester, PACCAR Corporation, Diamond Reo, and Breeze Corporations. General Motors effectively requested reconsideration in its response to a separate November notice (39 F.R. 40168, November 14, 1974) (Notice 7) by supporting reduced trailer requirements only with corresponding reduction of truck stopping distance requirements.

General Motors, in its response to Notice 7, indicated that similar 121 vehicles can register as much as a 20-percent difference in stopping distances as a result of uncontrolled variability in brake component performance. International Harvester, which until recently had supported 5-percent longer stopping distances on an interim basis, now points to certain variables, including brake linings, in requesting longer distances on a permanent basis. Diamond Reo reported the same experience in its comments to Notice 2 of Docket No. 74-10. PACCAR requested that S5.3 (stopping distance) be "temporarily repealed"

and that longer stopping distances be considered for the future. The NHTSA concludes that PACCAR's request is essentially a petition for rulemaking to increase the stopping distances on a permanent basis.

These positions raise issues which can arise whenever a standard is first implemented: (1) that production variables are so great that inordinate compliance margins are required and (2) that the brake packages necessary to achieve these compliance margins are so aggressive that the handling qualities and durability of affected vehicles are significantly degraded. The NHTSA is, of course, interested in receiving on a continuing basis any new technical information (particularly test data on production vehicles) that bears on these important safety issues. Based on the information submitted to date, however, NHTSA is not prepared to grant the outstanding petitions at this time.

PACCAR also requested that the stopping distance requirements be delayed until the performance of antilock systems and certain test procedures, conditions, and the control trailer test device are specified in areas considered deficient by PACCAR. While these issues might appropriately be considered for future rulemaking, the NHTSA does not agree that change of these important elements of the standard should delay orderly implementation of the standard. Accordingly, the PACCAR request in these areas is denied.

The second area of the standard in which manufacturers seek reconsideration is limited relaxation of requirements for vehicles with front steerable drive axles (S5.3.1.2). Based on unavailability of this axle design, vehicles manufactured before September 1, 1975, with a front

steerable drive axle of any size may meet retardation force requirements in place of stopping distance requirements. Because of unavailability of the lighter front driving axles for a greater period, vehicles manufactured before September 1, 1976, with a front steerable drive axle with a gross axle weight rating (GAWR) of less than 18,000 pounds may meet retardation force requirements in place of stopping distance requirements.

Diamond Reo, International Harvester, and Mack Trucks, Inc., now request that the heavier axles also be permitted relaxed requirements until September 1, 1976. White Motor Company in its response to Notice 10 of Docket No. 74-10 requested the relaxed requirements until September 1, 1977. The NHTSA indicated in Notice 6 that this axle type is available and has been offered by Oshkosh Truck Company to the other manufacturers of this vehicle class. While Diamond Reo does not indicate it considered the Oshkosh axle, the other manufacturers indicate that redesign of their limited vehicle output in this area to accept the Oshkosh axle would be unjustified because of cost. Oshkosh, on the other hand, has offered to provide, at cost, technical assistance in the installation of Oshkosh axles to non-Oshkosh pilot test vehicles, and consultation and review of test data obtained from truck-manufacturer-conducted tests.

The NHTSA concludes, based on all information available, that the axle is available at this time and that sufficient leadtime has been made available for the location and testing of an axle of this type. The manufacturers who request further delay do not claim that the installation is technologically unfeasible or otherwise impracticable. Although they cite adverse economic consequence for the limited numbers of vehicles they produce in this category, this argument does not consider the major economic consequences for the Oshkosh Company, who state that 72 percent of their vehicle production would be adversely affected by any further delay. The petitions of White, International Harvester, Diamond Reo, and Mack are accordingly denied.

Due to unavailability until September 1, 1976, front steerable non-driving axles with a GAWR in excess of 16,000 pounds are permitted the same

relaxed requirements as the driving axles just discussed. White Motor Corporation, in its comments to Notice 10 of Docket No. 74-10, requested the relaxed requirements be extended to September 1, 1977, because of the long leadtime associated with manufacture of these vehicles. The NHTSA will monitor the availability of these axles to ensure their readiness for September 1, 1976, and will consider a later effective date for them if they are not available as presently scheduled. At this time, however, it appears that the axles will be ready sufficiently in advance of September 1, 1976, to permit satisfaction of the full requirements on that date. Accordingly White's petition is denied.

As earlier noted, both the vehicles equipped with certain driving or non-driving front steerable axles are permitted to meet retardation force requirements in place of distance requirements for an interim period. A reduction of these retardation force requirements was the subject of a proposal in Notice 7, which was acted on for trailers in Notice 11 (40 F.R. 1246, January 7, 1975). It was concluded that no argument had been made for a temporary reduction of retardation forces on the front axle of heavy trucks, most of which are integral trucks which experience high levels of dynamic load shift during braking. Comments by PACCAR to Notice 6, however, emphasized that retardation force requirements at the rear axle could be reduced because the load shift off the rear axle effectively results in over-torque of that axle.

The NHTSA's intent in substituting retardation force requirements for stopping distance is to ensure the best braking that is presently available, and it appears that rear brake retardation requirements may, in some cases, inhibit the tailoring of brake systems on different vehicles to achieve this goal. The most satisfactory means to reduce rear axle requirements while maintaining front axle requirements is to eliminate requirements for the vehicle as a whole, to permit the manufacturer latitude in selecting retardation force requirements at the rear axle. The present requirements for front axle retardation forces remain in the standard, and by this notice, the NHTSA deletes the requirement for retardation force values for the vehicle as a whole.

PACCAR requested complete withdrawal of the retardation force requirements, as well as the brake power and fade requirements as they affect all trucks. The NHTSA, of course, considers these characteristics of a brake system fundamental, and does not agree that the requirements are impracticable or should be withdrawn. PACCAR's request is therefore denied.

With regard to the vehicles that may meet retardation force requirements in place of stopping distances, International Harvester requested confirmation that S6.3.1.2 is an option that the manufacturer may choose to ignore in the loaded or unloaded condition if the vehicle in question meets the stopping distance requirements in that condition. This agency stated in the preamble to Notice 6 that "the NHTSA considers it crucial panic stop, loaded or unloaded, if the vehicle is to maintain complete directional stability in a unable to meet the stopping distance requirements in that condition." International Harvester's understanding of this language is correct.

PACCAR requested deletion of brake actuation requirements as redundant in view of stopping distance requirements. The NHTSA has considered elimination of the requirements previously, and concluded at that time that the requirement should be maintained (37 F.R. 3905, February 24, 1972). At this time the actuation requirements ensure fast braking on the vehicles under S5.3.1.2 which need not meet stopping distance requirements. The NHTSA will consider this PACCAR request for future rulemaking but does not act on the petition for amendment at this time.

Finally, PACCAR requested specification of antilock performance characteristics. The standard does not require antilock systems, and the NHTSA has concluded that specification for manufacturers who utilize these devices would be design restrictive, without a corresponding safety benefit. No manufacturer other than PACCAR indicates that a safety need exists to specify the cycling of antilocks, and the NHTSA is unable to determine from the PACCAR petition what evidence exists that antilock specification would improve vehicle handling. PACCAR's petition is accordingly denied.

In areas unrelated to the petitions for reconsideration, the NHTSA corrects an error in S6.1.8.1 and adds a clarifying word to S5.7.1.2, without in any way changing the requirements of those paragraphs.

In consideration of the foregoing, Standard No. 121 (49 C.F.R. § 571.121) is amended. . . .

*Effective date:* March 21, 1975. Because of Standard No. 121's March 1, 1975, effective date and because this order relieves a restriction, it is found for good cause shown that an effective date sooner than 30 days from the date of publication of that order is in the public interest.

(Sec. 103, 119, 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 C.F.R. 1.51).

Issued on March 14, 1975.

James B. Gregory  
Administrator

**40 F.R. 12797**  
**March 21, 1975**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 121****Air Brake Systems****(Docket No. 74-10; Notice 16)**

This notice responds to three petitions for reconsideration of the National Highway Traffic Safety Administration's December 31, 1974, decision to implement Standard No. 121, *Air brake systems*, as scheduled on January 1, 1975, for trailers and on March 1, 1975, for trucks and buses. The petition of American Fire Apparatus Company for reconsideration of the September 1, 1975, effective date for fire fighting apparatus is granted for a period of six months. The petitions of the Milk Industry Foundation and of Representative James H. Quillen for delay of the standard as a whole are denied. The petition of White Motor Corporation has already been responded to by Notice 15 of Docket No. 74-10 (40 F.R. 12797, March 21, 1975).

The Milk Industry Foundation (the Foundation) requested delay of the standard as it applies to trucks and buses until March 1, 1976, to permit further testing of the new braking systems (and redesign as necessary) and to conduct an analysis of the economic impact of the standard. The Foundation believes that insufficient time has been allowed for vehicle testing.

The NHTSA has evaluated the readiness of manufacturers to meet the standard throughout the four years since issuance. The original January 1, 1973, effective date was delayed until September 1, 1974. In early 1974, the vehicle and component test programs involved in implementation were again evaluated, and the NHTSA proposed delay of the effective date to January 1, 1975 (39 F.R. 7966, March 1, 1974) (39 F.R. 17563, May 17, 1974). Based on submitted comments, it was determined that a March 1, 1975, effective date for trucks and buses, and a January 1, 1975, date for trailers would permit adequate time to complete preparations for the standard's imple-

mentation (39 F.R. 17750, May 17, 1974) (39 F.R. 20380, June 10, 1974). These delays were undertaken although one manufacturer expressed readiness to meet the September 1974 date, and International Harvester, the largest manufacturer of air-braked vehicles, expressed readiness to meet the January 1, 1975, effective date. This decision was reevaluated in November 1974 and found to remain valid, although a few larger vehicle types were permitted a later date (39 F.R. 39880, November 12, 1974).

The Foundation also requested that the standard be delayed until its economic impact is evaluated. The NHTSA conducted an evaluation of economic impact shortly before implementation of the standard (39 F.R. 43639, December 17, 1974) and, based on several hundred comments, concluded that the standard should be implemented (40 F.R. 1248, January 7, 1975). The NHTSA disagrees with the Foundation that the evaluation should have been conducted in accordance with Executive Order 11821 (on inflation impact studies) when the final criteria and procedures for implementation of the Order were not yet established. The NHTSA has committed itself to continue monitoring the effectiveness of its standard in accordance with its statutory mandate, with a view to identifying any modifications that would lower costs while achieving comparable levels of safety.

As indicated by the submissions of the Milk Industry Foundation, there has evidently been much confusion among user groups such as the dairy industry over the effect of the braking standards on their operations. In order to meet the requirements that a vehicle stop in a specified distance when tested by the government, chassis manufacturers have in some cases specified center

of gravity heights for conformity purposes that are lower than the loaded center of gravity of trucks that these operators are accustomed to using. The body builders who complete and certify the trucks have passed these center of gravity specifications on to the user groups. This has given rise to fears on the part of the dairy industry and others that they must reduce the loads carried on their trucks.

Actually, this is neither the legal effect nor the intended policy effect of the standard. The standard does not regulate the manner in which trucks are loaded or used on the road, and users are free to use their own judgment in loading their trucks, as they have been in the past. The standard is designed so that a properly-designed vehicle which satisfies its performance requirements under the conditions stipulated for compliance testing will perform safely under all reasonable conditions or real world use. Trucks equipped with the stronger and better-modulated brakes required by the standard, when loaded similarly to those in the past, should in fact be much safer both for their occupants and for the rest of the driving public than comparable vehicles were before. If the NHTSA should discover vehicles being produced that do not perform safely when loaded in a normal manner and can establish that this condition is attributable to deficiencies in vehicle manufacture or design, it can proceed against their manufacturers under its safety-related defect jurisdiction.

Representative Quillen requested consideration of a significant postponement of the standard, believing that a delay would increase truck sales. An examination of the truck market indicates that several months' inventory of trucks manufactured without the new systems remained unsold on March 1, 1975, suggesting that the economic downturn, rather than the new systems, accounts for many lost sales. The American Trucking Associations statistics on general freight tonnage indicate a steady decline in highway tonnage from the high figure reached in November 1973. It does appear that some of the slowdown is at-

tributable to "pre-buying" of trucks to avoid Standard No. 121, but this effect would occur whatever the date of implementation. Accordingly the petitions of the Milk Industry Foundation and Representative Quillen are denied.

American Fire Apparatus Company has requested that the NHTSA reconsider its decision to implement the standard as scheduled, so far as it applies to fire fighting vehicles. NHTSA policy has been to grant fire fighting vehicles a minimum of two years from the issuance of any standard to achieve compliance because of the unique leadtime problems associated with the industry. (49 CFR § 571.8). On this basis, the NHTSA granted a delay of the effective date from September 1, 1974, to September 1, 1975, for these vehicles at the request of American Fire Apparatus (39 F.R. 17750, May 17, 1974). At the same time the general implementation date was extended six months. The NHTSA agrees that fire fighting apparatus is entitled to a full year's delay because of its long leadtime problems.

By this notice, the NHTSA denies all outstanding petitions for reconsideration of Standard No. 121's effective dates, with the exception of the date for fire fighting vehicles.

In consideration of the foregoing, Standard No. 121 (49 CFR § 571.121) is amended. . . .

*Effective date:* June 16, 1975. Because the previously established effective date for fire fighting apparatus was less than 180 days after the date of publication of this amendment in the *Federal Register*, it is found for good cause shown that an effective date less than 180 days from the date of publication is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51).

Issued on May 12, 1975.

James B. Gregory  
Administrator

**40 F.R. 21031**  
**May 15, 1975**

## MOTOR VEHICLE SAFETY STANDARD NO. 121

### Air Brake Systems—Trucks, Buses and Trailers (Docket Nos. 70-16, 70-17; Notice No. 2)

**S1. Scope.** This standard establishes performance and equipment requirements for braking systems on vehicles equipped with air brake systems.

**S2. Purpose.** The purpose of this standard is to insure safe braking performance under normal and emergency conditions.

**S3. Application.** [This standard applies to trucks, buses, and trailers equipped with air brake systems. However, it does not apply to a fire fighting vehicle manufactured before March 1, 1976, or a heavy hauler trailer manufactured before September 1, 1976, or to any vehicle manufactured before September 1, 1976, that has a gross axle weight rating (GAWR) for any axle of 24,000 pounds or more, two or more front, steerable axles with a GAWR of 16,000 pounds or more for each axle, or to any vehicle which, in combination with another vehicle, constitutes a part of an "auto transporter" as defined in S4. In addition, the standard does not apply to any vehicle that meets any one of criteria (a) through (d), as follows: (40 F.R. 21031—May 15, 1975. Effective: 6/16/75)]

(a) [An overall vehicle width of 108 inches or more;

(b) An axle that has a GAWR of 29,000 pounds or more;

(c) A speed attainable in two miles of not more than 33 mph; or

(d) (1) A speed attainable in two miles of not more than 45 mph; and

(2) No cargo- or passenger-carrying capacity; and

(3) Either:

(i) All-wheel drive;

(ii) A steerable drive axle driven through gear reduction contained within the wheel; or

(iii) Two or more front steerable axles. (40 F.R. 8953—March 4, 1975. Effective: 3/1/75)]

#### S4. Definitions.

"Air brake system" means a system that uses air as a medium for transmitting pressure or force from the driver control to the service brake, but does not include a system that uses compressed air or vacuum only to assist the driver in applying muscular force to hydraulic or mechanical components.

"Antilock system" means a portion of a service brake system that automatically controls the degree of rotational wheel slip at one or more road wheels of the vehicle during braking. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)]

"Auto transporter" means a truck and a trailer designed for use in combination to transport motor vehicles, in that the towing vehicle is designed to carry cargo at a location other than the fifth wheel and to load this cargo only by means of the towed vehicle. (40 F.R. 1426—January 7, 1975. Effective: 1/1/75)]

"Heavy hauler trailer" means a trailer with one or more of the following characteristics:

(1) Its brake lines are designed to adapt to separation or extension of the vehicle frame; or

(2) Its body consists only of a platform whose primary cargo-carrying surface is not more than 40 inches above the ground in an unloaded condition, except that it may include sides that are designed to be easily removable and a permanent "front-end structure" as that term is used in § 393.106 of this title. (39 F.R. 28161—August 5, 1974. Effective: 1/1/75)]

“Skid number” means the frictional resistance of a pavement measured in accordance with American Society for Testing and Materials Method E-274-65T at 40 m.p.h., omitting water delivery as specified in paragraph 7.1 of that method.

【“Speed attainable in two miles” means the speed attainable by accelerating at maximum rate from a standing start for two miles on a level surface. (40 F.R. 8953—March 14, 1975. Effective: 3/1/75)】

**55. Requirements.** 【Each vehicle shall meet the following requirements under the conditions specified in S6. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**55.1 Required equipment—trucks and buses.** Each truck and bus shall have the following equipment:

**55.1.1 Air Compressor.** 【An air compressor of sufficient capacity to increase air pressure in the supply and service reservoirs from 85 pounds per square inch (p.s.i.) to 100 p.s.i. when the engine is operating at the vehicle manufacturer’s maximum recommended rpm within a time, in seconds, determined by the quotient

$$\frac{\text{actual reservoir capacity} \times 25}{\text{required reservoir capacity}}$$

(37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**55.1.2 Reservoirs.** 【One or more service reservoir systems, from which air is delivered to the brake chambers, and either an automatic condensate drain valve for each service reservoir or a supply reservoir between the service reservoir system and the source of air pressure. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**55.1.2.1** 【The combined volume of all service reservoirs and supply reservoirs shall be at least twelve times the combined volume of all service brake chambers at maximum travel of the pistons or diaphragms. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**55.1.2.2** 【Each reservoir shall be capable of withstanding an internal hydrostatic pressure of five times the compressor cutout pressure or 500 p.s.i., whichever is greater, for 10 minutes. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**55.1.2.3** 【Each service reservoir system shall be protected against loss of air pressure due to failure or leakage in the system between the service reservoir and the source of air pressure, by check valves or equivalent devices whose proper functioning can be checked without disconnecting any air line or fitting. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**55.1.2.4** Each reservoir shall have a condensate drain valve that can be manually operated.

**55.1.3 Towing vehicle protection system.** If the vehicle is intended to tow another vehicle equipped with air brakes, a system to protect the air pressure in the towing vehicle from the effects of a loss of air pressure in the towed vehicle. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**55.1.4 Pressure gauge.** 【A pressure gauge in each service brake system, readily visible to a person seated in the normal driving position, that indicates the service reservoir system air pressure. The accuracy of the gauge shall be within plus or minus 7 percent of the compressor cut-out pressure. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**55.1.5 Warning signal.** 【A signal, other than a pressure gauge, that gives a continuous warning to a person in the normal driving position when the ignition is in the “on” or “run” position and the air pressure in the service reservoir system is below 60 p.s.i. The signal shall be either visible within the driver’s forward field of view, or both audible and visible. (37 F.R. 12495—June 24, 1972. Effective: 9/1/74)】

**55.1.6 Antilock warning signal.** 【A signal on each vehicle equipped with an antilock system that gives a continuous warning to a person in the normal driving position when the ignition is in the “on” or “run” position in the event of a total electrical failure of the antilock system. The signal shall be either visible within the driver’s forward field of view or both audible, for a duration of at least 10 seconds, and continuously visible. The signal shall operate in the specified manner each time the ignition is returned to the “on” or “run” position. (37 F.R. 12495—June 24, 1972. Effective: 9/1/74)】

**55.1.7 Service brake stop lamp switch.** A switch that lights the stop lamps when the service

brake control is statically depressed to a point that produces a pressure of 6 p.s.i. or less in the service brake chambers.

**55.2 Required equipment—trailers.** Each trailer shall have the following equipment:

**55.2.1 Reservoirs.** One or more reservoirs to which the air is delivered from the towing vehicle.

**55.2.1.1** [A reservoir shall be provided that is capable, when pressurized to 90 p.s.i., of releasing the vehicle's parking brakes at least once and that is unaffected by a loss of air pressure in the service brake system. (37 F.R. 12495—June 24, 1972. Effective: 9/1/74)]

**55.2.1.2** [Total service reservoir volume shall be at least eight times the combined volume of all service brake chambers at maximum travel of the pistons or diaphragms. (37 F.R. 12495—June 24, 1972. Effective: 9/1/74)]

**55.2.1.3** [Each reservoir shall be capable of withstanding an internal hydrostatic pressure of 500 p.s.i. for 10 minutes. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)]

**55.2.1.4** Each reservoir shall have a condensate drain valve that can be manually operated. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)]

**55.2.1.5** Each service reservoir shall be protected against loss of air pressure due to failure or leakage in the system between the service reservoir and its source of air pressure by check valves or equivalent devices. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)]

**55.3 [Service brakes—road tests.** The service brake system on each truck and bus shall, under the conditions of S6.1, meet the requirements of S5.3.1, S5.3.3, and S5.3.4 when tested without adjustments other than those specified in this standard. The service brake system on each trailer shall, under the conditions of S6.1, meet the requirements of S5.3.2, S5.3.3, and S5.3.4 when tested without adjustments other than those specified in this standard. However, the truck and trailer portions of an auto transporter (if both are manufactured after September 1, 1976) shall, in combination, meet the requirements of

S5.3.1 as they apply to a single unit truck or bus, in place of the requirements of S5.3.2 as they apply to the trailer portion, and in place of the requirements of S5.3.1 as they apply to the truck portion in the loaded condition. (40 F.R. 1426—January 7, 1975. Effective: 1/1/15)]

**55.3.1 Stopping distance—trucks and buses.** [Except as provided in S5.3.1.2 and S5.3.1.3, when stopped six times for each combination of weight, speed, and road condition specified in S5.3.1.1, in the sequence specified in Table I, the vehicle shall stop at least once in not more than the distance specified in Table II, measured from the point at which movement of the service brake control begins, without any part of the vehicle leaving the roadway and without lockup of any wheel at speeds above 10 mph except for

(a) Controlled lockup of wheels allowed by an antilock system, or

(b) Lockup of wheels on nonsteerable axles other than the two rearmost nonliftable, nonsteerable axles on a vehicle with more than two nonsteerable axles. (39 F.R. 17550—May 17, 1974. Effective: 3/1/75)]

TABLE I  
STOPPING SEQUENCE

1. Burnish
2. Control trailer service brake stops at 60 mi/h (for truck-tractors tested with a control trailer trailer in accordance with S6.1.10.6).
3. Control trailer emergency brake stops at 60 mi/h (for truck-tractors tested with a control trailer in accordance with S6.1.10.7).
4. Stops with vehicle at gross vehicle weight rating:
  - (a) 20 mi/h service brake stops on skid number of 75.
  - (b) 60 mi/h service brake stops on skid number of 75.
  - (c) 20 mi/h service brake stops on skid number of 30.
  - (d) 20 mi/h emergency brake stops on skid number of 75.
  - (e) 60 mi/h emergency brake stops on skid number of 75.

5. Parking brake test with vehicle loaded to gross vehicle weight rating.
6. Stops with vehicle at unloaded weight plus 500 lb.:
  - (a) 20 mi/h service brake stops on skid number of 75.
  - (b) 60 mi/h service brake stops on skid number of 75.
  - (c) 20 mi/h service brake stops on skid number of 30.
  - (d) 20 mi/h emergency brake stops on skid number of 75.
  - (e) 60 mi/h emergency brake stops on skid number of 75.
7. Parking brake test with vehicle at unloaded weight plus 500 lb.

[39 F.R. 17550—May 17, 1974. Effective: 3/1/75]

**[S5.3.1.1** Stop the vehicle from 60 m.p.h. and 20 m.p.h. on a surface with a skid number of 75, and from 20 m.p.h. on a wet surface with a skid number of 30, with the vehicle (a) loaded to its gross vehicle weight rating, and (b) at its unloaded vehicle weight plus 500 pounds (including driver and instrumentation). If the speed attainable in 2 miles is less than 60 m.p.h., the vehicle shall stop from a speed in Table II that is 4 to 8 m.p.h. less than the speed attainable in 2 miles. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)]

TABLE II.—Stopping Distance in Feet

Vehicle speed in miles per hour	Service Brake stopping distance		Emergency Brake stopping distance	
	Column 1	Column 2	Column 3	Column 4
	Skid No. 75	Skid No. 30	Skid No. 75	
20	33	54	83	85
25	49		123	131
30	68		170	186
35	90		225	250
40	115		288	325
45	143		358	409
50	174		435	504
55	208		520	608
60	245		613	720

[39 F.R. 804—January 3, 1974. Effective: 9/1/74]

**S5.3.1.2** [When stopped in accordance with S5.3.1, with its brakes fully applied, a truck manufactured before September 1, 1976, that has a front steerable non-driving axle with a GAWR of 16,000 pounds or more, or a front steerable drive axle with a GAWR of less than 18,000 pounds, and a truck manufactured before September 1, 1975, that has a front steerable drive axle of any GAWR, need not meet the requirement that it stop in the distance specified in Table II for stops on a surface with a skid number of 75 if the brakes on its front axle conform to the retardation formula and Column 1 values of S5.4.1. The vehicles must nevertheless meet the requirements of staying within the 12-foot lane and those relating to wheel lock-up. (40 F.R. 12797—March 21, 1975. Effective: 3/21/75)]

**[S5.3.1.3** When stopped in accordance with S5.3.1, a truck or bus manufactured before September 1, 1975, other than a truck described in S5.3.1.2, shall stop at least once for each speed and weight condition in not more than the distance specified in Table IIa, on a surface with a skid number of 75, instead of meeting the stopping distances specified in Table II for stops on a surface with a skid number of 75. (39 F.R. 39880—November 12, 1974. Effective: 3/1/75)]

TABLE IIa.—Stopping Distance in Feet, Skid No. 75 Surface (Until September 1, 1975)

Vehicle speed in miles per hour	Service Brake stopping distance in feet Column 1	Emergency Brake stopping distance in feet Column 2
20	35	85
25	52	131
30	72	186
35	95	250
40	121	325
45	151	409
50	183	504
55	219	608
60	258	720

(39 F.R. 17550—May 17, 1974. Effective: 3/1/75)

**S5.3.2 Stopping capability—trailers.** [When tested at each combination of weight, speed, and

road condition specified in S5.3.2.1, in the sequence specified in Table I, with air pressure of 90 psi in the control line and service reservoir system and with no application of the towing vehicle's brakes, a trailer shall stop without any part of the trailer leaving the roadway and without lockup of any wheel at speeds above 10 mph, except for

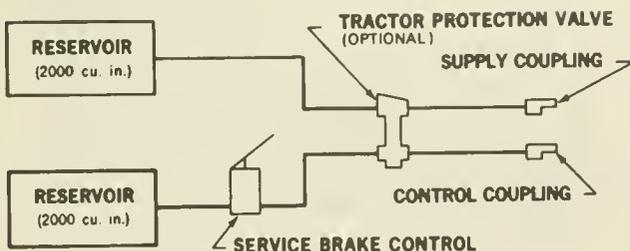
- (a) Controlled lockup of wheels allowed by an antilock system, or
- (b) Lockup of wheels on nonsteerable axles other than the two rearmost nonliftable, nonsteerable axles on a trailer with more than two nonsteerable axles.

(39 F.R. 804—January 3, 1974. Effective: 9/1/74)】

**S5.3.2.1** 【Stop the vehicle from 60 m.p.h. and 20 m.p.h. on a surface with skid number of 75, and from 20 m.p.h. on a wet surface with a skid number of 30, with the vehicle (a) loaded to its gross vehicle weight rating, and (b) at its unloaded vehicle weight plus 500 pounds (including instrumentation). (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**S5.3.3 Brake actuation time.** 【With an initial service reservoir system air pressure of 100 psi, the air pressure in each brake chamber shall, in the case of trucks and buses, reach 60 psi in not more than 0.35 seconds measured from the first movement of the service brake control and, in the case of trailers, reach 60 psi in not more than 0.25 seconds measured from the first movement of the service brake control. A vehicle designed to tow a vehicle equipped with air brakes shall be capable of meeting the above actuation time

**FIGURE 1**  
**TRAILER TEST RIG**



requirement with a 50-cubic-inch test reservoir connected to the control line coupling. A trailer shall meet the above actuation time requirement with its brake system connected to the test rig shown in Figure 1. (39 F.R. 17550—May 17, 1974. Effective: 1/1/75 and 3/1/75)】

**S5.3.4 Brake release time.** 【With an initial brake chamber air pressure of 95 psi, the air pressure in each brake chamber shall, in the case of trucks and buses, fall to 5 psi in not more than 0.50 seconds measured from the first movement of the service brake control and, in the case of trailers, fall to 5 psi in not more than 0.60 seconds measured from the first movement of the service brake control. A vehicle designed to tow another vehicle equipped with air brakes shall be capable of meeting the above release time requirement with a 50-cubic-inch test reservoir connected to the control line coupling. A trailer shall meet the above release time requirement with its brake system connected to the test rig shown in Figure 1. (39 F.R. 17550—May 17, 1974. Effective: 1/1/75 and 3/1/75)】

**【S5.4 Service brake system—dynamometer tests.** When tested without prior road testing, under the conditions of S6.2, each brake assembly shall meet the requirements of S5.4.1, S5.4.2, and S5.4.3 when tested in sequence and without adjustments other than those specified in the standard. For purposes of the requirements of S5.4.2 and S5.4.3, an average deceleration rate is the change in velocity divided by the deceleration time measured from the onset of deceleration. (37 F.R. 12495—June 24, 1972. Effective: 9/1/74)】

**S5.4.1. Brake retardation force.** 【The sum of the retardation forces exerted by the brakes on each vehicle designed to be towed by another vehicle equipped with air brakes shall be such that the quotient

$$\frac{\text{sum of the brake retardation forces}}{\text{sum of GAWR's}}$$

relative to brake chamber air pressure, shall have values not less than those shown in Column 1 of Table III, except that the values in the case of each such vehicle manufactured before September 1, 1976, shall be those shown in Column 2 of Table III. Retardation force shall be determined as follows:

TABLE III  
BRAKE RETARDATION FORCE

BRAKE RETARDATION FORCE GAWR		BRAKE CHAMBER PRESSURE, p.s.i.
Column 1	Column 2	Column 3
0.100	0.06	20
0.175	0.13	30
0.250	0.20	40
0.325	0.27	50
0.400	0.34	60
0.475	0.41	70
0.550	0.47	80

(40 F.R. 1426—January 7, 1975. Effective: 1/1/75) ]

**[55.4.1.1** After burnishing the brake pursuant to S6.2.6, retain the brake assembly on the inertia dynamometer. With an initial brake temperature between 125°F. and 200°F., conduct a stop from 50 m.p.h., maintaining brake chamber air pressure at a constant 20 p.s.i. Measure the average torque exerted by the brake from the time the specified air pressure is reached until the brake stops and divide by the static loaded tire radius specified by the tire manufacturer to determine the retardation force. Repeat the procedure six times, increasing the brake chamber air pressure by 10. After each stop, rotate the brake drum or disc until the temperature of the brake falls to between 125°F. and 200°F. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74) ]

**[55.4.2 Brake power.** When mounted on an inertia dynamometer, each brake shall be capable of making 10 consecutive decelerations at an average rate of 9 f.p.s.p.s. from 50 m.p.h. to 15 m.p.h., at equal intervals of 72 seconds, and shall be capable of decelerating to a stop from 20 m.p.h. at an average deceleration rate of 14 f.p.s.p.s. one minute after the 10th deceleration. The series of decelerations shall be conducted as follows: (37 F.R. 3905—February 24, 1972. Effective: 9/1/74) ]

**[55.4.2.1** With an initial brake temperature between 150°F. and 200°F. for the first brake application, and the drum or disc rotating at a speed equivalent to 50 m.p.h., apply the brake and decelerate at an average deceleration rate of 9

f.p.s.p.s. to 15 m.p.h. Upon reaching 15 m.p.h., accelerate to 50 m.p.h. and apply the brake for a second time 72 seconds after the start of the first application. Repeat the cycle until 10 decelerations have been made. The service line air pressure shall not exceed 90 p.s.i. during any deceleration. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74) ]

**[55.4.2.2** One minute after the end of the last deceleration required by S5.4.2.1 and with the drum or disc rotating at a speed of 20 m.p.h., decelerate to a stop at an average deceleration rate of 14 f.p.s.p.s. The service brake line air pressure shall not exceed 108 p.s.i. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74) ]

**55.4.3 Brake recovery.** [Starting 2 minutes after completing the tests required by S5.4.2, the brake shall be capable of making 20 consecutive stops from 30 mph at an average deceleration rate of 12 ft/s/s, at equal intervals of 1 minute measured from the start of each brake application. The service line air pressure needed to attain a rate of 12 ft/s/s shall be not more than 75 lb/in<sup>2</sup>, and not less than 20 lb/in<sup>2</sup> for a brake not subject to the control of an antilock system, or 12 lb/in<sup>2</sup> for a brake subject to the control of an antilock system. (39 F.R. 17550—May 17, 1974. Effective: 1/1/75 and 3/1/75) ]

### 55.5 Antilock system.

**[55.5.1 Antilock system failure.** On a vehicle equipped with an antilock system, electrical failure of any part of the antilock system shall not increase the actuation and release times of the service brakes. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74) ]

**[55.5.2 Antilock system power—trailers.** On a trailer equipped with an antilock system that requires electrical power for operation, the power shall be obtained from the stop lamp circuit. Additional circuits may also be used to obtain redundant sources of electrical power. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74) ]

**55.6 Parking brake system.** [Each vehicle other than a trailer converter dolly shall have a parking brake system that under the conditions of S6.1 meets the requirements of S5.6.1 or S5.6.2. at the manufacturer's option, and the re-

quirements of S5.6.3 and S5.6.4. (39 F.R. 804—January 3, 1974. Effective: 9/1/74)】

**[S5.6.1 Static retardation force.** With all other brakes rendered inoperative, the static retardation force produced by the application of the parking brakes on an axle other than a steerable front axle during a static drawbar pull in a forward or rearward direction shall be such that the quotient

$$\frac{\text{static retardation force}}{\text{GAWR}}$$

is not less than 0.28. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**[S5.6.2 Grade holding.** With all parking brakes applied, the vehicle shall remain stationary facing uphill and facing downhill on a smooth, dry Portland cement concrete roadway with a 20% grade, both (a) when loaded to its gross vehicle weight rating, and (b) at its unloaded vehicle weight plus 500 pounds (including driver and instrumentation). (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**[S5.6.3 Application and holding.** The parking brakes shall be applied by an energy source that is not affected by loss of air pressure or brake fluid pressure in the service brake system. Once applied, the parking brakes shall be held in the applied position solely by mechanical means. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**[S5.6.4 Parking brake control—trucks and buses.** The parking brake control shall be separate from the service brake control. It shall be operable by a person seated in the normal driving position. The control shall be identified in a manner that specifies the method of control operation. The parking brake control shall control the parking brakes of the vehicle and of any air braked vehicle that it is designed to tow. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**[S5.7 Emergency braking capability—trucks and buses.** Each truck and bus shall have a braking system with emergency braking capability that meets the requirements of S5.7.1 or, at the manufacturer's option, the requirements of S5.7.2. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**[S5.7.1 Parking brake system with automatic application.** Each vehicle shall have a parking brake system acting on each axle, except steerable front axles, that conforms to S5.6 and that meets the following requirements: (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**[S5.7.1.1 Automatic application.** The parking brakes shall be automatically applied and the supply line to any towed vehicle vented to atmospheric pressure when the air pressure in all service reservoirs is less than the automatic application pressure level. The automatic application pressure level shall be between 20 and 45 p.s.i. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**[S5.7.1.2 Automatic braking performance.** With the parking brake automatically applied, a vehicle shall either be capable of meeting the requirements of S5.7.2.3, with distances measured from the point of automatic application, or shall have a static retardation force not greater than have a static retardation force quotient not greater than 0.40 for any axle, determined in accordance with S5.6.1. (40 F.R. 12797—March 21, 1975. Effective: 3/21/75)】

**[S5.7.1.3 Release after automatic application.** After automatic application, the parking brakes shall be releasable at least once by means of a parking control. The parking brakes shall be releasable only if they can be automatically re-applied and exert the force required by S5.6 immediately after release. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**[S5.7.1.4 Manual operation.** The parking brakes shall be manually operable and releasable when the air pressure in the service reservoir system is sufficient to keep the parking brakes from automatically applying. (37 F.R. 12495—June 24, 1972. Effective: 9/1/74)】

**[S5.7.2 Modulated emergency braking system.** Each vehicle that does not have a parking brake system that is automatically applied in the event of air pressure loss shall have a parking brake system conforming to S5.6 that is capable of manual application at any reservoir system pressure level, and shall have an emergency braking system that meets the following requirements: (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)】

**[55.7.2.1 Emergency braking control.** The emergency braking system shall be controlled by the service brake control or the parking brake control. The control for the emergency braking system shall control the brakes on any towed vehicle equipped with air brakes. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)]

**[55.7.2.2 Emergency braking system failure.** In the event of a failure of a valve, manifold, brake fluid housing, or brake chamber housing that is common to the service brake and emergency braking systems, loss of air shall not cause the parking brake to be inoperable. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)]

**55.7.2.3 Emergency braking stopping distance.** [Except as specified in 55.7.2.3.1 and 55.7.2.3.2, when stopped six times for each combination of weight and speed specified in 55.3.1.1 on a road surface with a skid number of 75, with a single failure in the service brake system of a part designed to contain compressed air or brake fluid (except failure of a common valve, manifold, brake fluid housing, or brake chamber housing), the vehicle shall stop at least once in not more than the distance specified in column 3 of Table II, measured from the point at which movement of the brake control begins, without any part of the vehicle leaving the roadway, except that a truck-tractor tested at its unloaded vehicle weight plus 500 pounds shall stop at least once in not more than the distance specified in Column 4 of Table II. (39 F.R. 17550—May 17, 1974. Effective: 1/1/75 and 3/1/75)]

**55.7.2.3.1** [A truck manufactured before September 1, 1976, that has a front steerable non-driving axle with a GAWR of 16,000 pounds or more, or a front steerable drive axle with a GAWR of less than 18,000 pounds, and a truck manufactured before September 1, 1975, that has a front steerable drive axle of any GAWR, must stop in accordance with 55.7.2.3 without any part of the vehicle leaving the roadway, but need not stop in the distances specified. (39 F.R. 39880—November 12, 1974. Effective: 3/1/75)]

**[55.7.2.3.2** When stopped in accordance with 55.7.2.3, a truck or bus manufactured before September 1, 1975, other than a truck described in 55.7.2.3.1, shall stop at least once for each speed and weight condition on a surface with a skid number of 75 in not more than the distance specified in Table IIa instead of meeting the stopping distances specified in Table II for stops on a surface with a skid number of 75. (39 F.R. 39880—November 12, 1974. Effective: 3/1/75)]

**55.8 Emergency braking capability—trailers.** [Each trailer other than a trailer converter dolly shall have a parking brake system that conforms to 55.6 and that applies with the force specified in 55.6.1 or 55.6.2 when the air pressure in the supply line is at atmospheric pressure. A trailer converter dolly shall have, at the manufacturer's option, (a) a parking brake system that conforms to 55.6 and that applies with the force specified in 55.6.1 or 55.6.2 when the air pressure in the supply line is at atmospheric pressure, or (b) an emergency system that automatically controls the service brakes when the service reservoir is at any pressure above 20 lb/in<sup>2</sup> and the supply line is at atmospheric pressure. (39 F.R. 804—January 3, 1974. Effective: 9/1/74)]

**56. Conditions.** The requirements of 55 shall be met under the following conditions. Where a range of conditions is specified, the vehicle must be capable of meeting the requirements at all points within the range.

**56.1 Road test conditions.**

**56.1.1** [Except as otherwise specified the vehicle is loaded to its gross vehicle weight rating, distributed proportionally to its gross axle weight ratings. (39 F.R. 804—January 3, 1974. Effective: 9/1/74)]

**56.1.2** [The inflation pressure is as specified by the vehicle manufacturer for the gross vehicle weight rating. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)]

**56.1.3** [Unless otherwise specified, the transmission selector control is in neutral or the clutch is disengaged during all decelerations and during static parking brake tests. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)]

**S6.1.4** All vehicle openings (doors, windows, hood, trunk, cargo doors, etc.) are in a closed position except as required for instrumentation purposes.

**S6.1.5** The ambient temperature is between 32° F. and 100° F.

**S6.1.6** The wind velocity is zero.

**S6.1.7** [Stopping tests are conducted on a 12-foot wide level roadway having a skid number of 75, unless otherwise specified. The vehicle is aligned in the center of the roadway at the beginning of a stop. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)]

**S6.1.8** [The brakes on a vehicle manufactured before September 1, 1976, are burnished before testing, at the manufacturer's option, in accordance with S6.1.8.1 or S6.1.8.2. The brakes on a vehicle manufactured on or after September 1, 1976, are burnished before testing in accordance with S6.1.8.1. However, for vehicles with parking brake systems not utilizing the service brake friction elements, burnish the friction elements of such systems prior to the parking brake test according to the manufacturer's recommendations. (39 F.R. 17550—May 17, 1974. Effective: 1/1/75 and 3/1/75)]

**S6.1.8.1** [With the transmission in the highest gear appropriate for the series given in Table IV make 500 brake applications at a deceleration rate of 10 ft/s/s, or at the vehicle's maximum deceleration rate, if not less than 10 ft/s/s, in the sequence specified in Table IV. After each brake

TABLE IV

Series	Snubs	Snub conditions (highest speed specified)
1	175	40 to 20 mph.
2	25	45 to 20 mph.
3	25	50 to 20 mph.
4	25	55 to 20 mph.
5	250	60 to 20 mph.

[39 F.R. 804—January 3, 1974. Effective: 9/1/74]

application, accelerate to the speed specified and maintain that speed until making the next brake application at a point 1 mile from the initial point of the previous brake application. If a vehicle cannot attain the specified speed in 1 mile, continue to accelerate until the specified speed is reached or until the vehicle has traveled

1.5 miles from the initial point of the previous brake application. If during any of the brake applications specified in Table IV, the hottest brake reaches 500° F., make the remainder of the 500 applications from that snub condition except that a higher or lower snub condition shall be used as necessary to maintain an after-stop temperature of 500° F.±50° F. Any automatic pressure limiting valve is in use to limit pressure as designed, except that any automatic front axle pressure limiting valve is bypassed if the temperature of the hottest brake on a rear axle exceeds the temperature of the hottest brake on a front axle by more than 125° F. A bypassed valve is reconnected if the temperature of the hottest brake on a front axle exceeds the temperature of the hottest brake on a rear axle by 100° F. After burnishing, adjust the brakes as recommended by the vehicle manufacturer. (39 F.R. 39880—November 12, 1974. Effective: 3/1/75)]

**[S6.1.8.2** With the transmission in the highest gear range appropriate for 40 mph, make 400 brake applications from 40 mph to 20 mph at 10 ft/s/s. After each brake application accelerate to 40 mph and maintain that speed until making the next application at a point 1.5 miles from the point of the previous brake application. After burnishing, adjust the brakes as recommended by the vehicle manufacturer. (39 F.R. 804—January 3, 1974. Effective: 9/1/74)]

**[S6.1.9** Static parking brake tests for a semi-trailer are conducted with the front end supported by an unbraked dolly. The weight of the dolly is included as part of the trailer load. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)]

**[S6.1.10** In a test other than a static parking brake test, a truck-tractor manufactured before September 1, 1976, is tested at its gross vehicle weight rating by loading it without a trailer or, at the manufacturer's option, by coupling it to a flatbed semitrailer (hereafter, control trailer) as specified in S6.1.10.1 to S6.1.10.7. In a test other than a static parking brake test, a truck-tractor manufactured on or after September 1, 1976, is tested at its gross vehicle weight rating by coupling it to a control trailer as specified in S6.1.10.1 to S6.1.10.7.

**S6.1.10.1** The control trailer conforms to this standard.

**S6.1.10.2** The center of gravity of the loaded control trailer is on the trailer's longitudinal centerline at a height of  $66 \pm 3$  in. above the ground.

**S6.1.10.3** For a truck-tractor with a rear axle gross axle weight rating of 26,000 lb or less, the control trailer has a single axle with a gross axle weight rating of 18,000 lb and a length, measured from the transverse centerline of the axle to the centerline of the kingpin, of  $258 \pm 6$  in.

**S6.1.10.4** For a truck-tractor with a total rear axle gross axle weight rating of more than 26,000 lb the control trailer has a tandem axle with a combined gross axle weight rating of 32,000 lb and a length, measured from the transverse centerline between the axles to the centerline of the kingpin, of  $390 \pm 6$  in.

**S6.1.10.5** The control trailer is loaded so that its axle is loaded to its gross axle weight rating and the tractor is loaded to its gross vehicle weight rating, with the tractor's fifth wheel adjusted so that the load on each axle measured at the tire-ground interface is most nearly proportional to the axles' respective gross axle weight ratings.

**S6.1.10.6** [Test equipment specification. The control trailer's service brakes are capable of stopping the combination from the maximum speed at which the tractor is tested, under the conditions of S6.1, without assistance from the tractor brakes, in the distance found by multiplying the service brake stopping distance specified in Table II by the ratio:

$$\frac{\text{weight on all axles of combination}}{\text{weight on trailer axles}}$$

with the tractor's fifth wheel adjusted as specified in S6.1.10.5, the trailer service reservoirs pressurized to 100 lb/in<sup>2</sup>, and the trailer loaded so that its axle is at gross axle weight rating and its kingpin is at empty vehicle weight. The stopping distance is measured from the point at which movement of the valve controlling the trailer brakes begins. The service brake chambers on the trailer reach 60 lb/in<sup>2</sup> in not less than 0.20 second and not more than 0.30 second, measured from the instant at which movement

of the valve controlling the trailer brakes begins. (39 F.R. 17550—May 17, 1974. Effective: 1/1/75 and 3/1/75)]

**S6.1.10.7** [Test equipment specification. The control trailer's emergency brakes are capable of stopping the combination under the conditions of S6.1 from the maximum speed at which the tractor is tested, without assistance from the tractor's brakes, in the distance found by multiplying the emergency brake stopping distance in column 3 of Table II by the ratio:

$$\frac{\text{weight on all axles of combination}}{\text{weight on trailer axles}}$$

with the combination loaded in accordance with S6.1.10.5. Stopping distance is measured from the point at which movement of the valve controlling the trailer brakes begins. In the case of control trailers that utilize parking brakes for emergency stopping capability, the pressure in the trailer's spring parking brake chambers falls from 95 lb/in<sup>2</sup> to 5 lb/in<sup>2</sup> in not less than 0.50 second and not more than 0.60 second, measured from the instant at which movement of the valve controlling the trailer's spring parking brakes begins. (39 F.R. 17550—May 17, 1974. Effective: 1/1/75 and 3/1/75)]

**[S6.1.11 Special drive conditions.** A vehicle equipped with an interlocking axle system or a front wheel drive system that is engaged and disengaged by the driver is tested with the system disengaged. (39 F.R. 804—January 3, 1974. Effective: 9/1/74)]

**[S6.1.12 Lifiable axles.** A vehicle with a liftable axle is tested at gross vehicle weight rating with the liftable axle down and at unloaded vehicle weight with the liftable axle up. (39 F.R. 804—January 3, 1974. Effective: 9/1/74)]

**[S6.1.13** After September 1, 1975, the trailer test rig shown in Figure 1 is capable of increasing the pressure in a 50 cubic inch reservoir from atmospheric to 60 lb/in<sup>2</sup> in 0.06 second, measured from the first movement of the service brake control to apply service brake pressure and of releasing pressure in such a reservoir from 95 to 5 lb/in<sup>2</sup> in 0.22 second measured from the first movement of the service brake control to release service brake pressure. (39 F.R. 17550—May 17, 1974. Effective: 1/1/75 and 3/1/75)]

## S6.2 Dynamometer test conditions.

**S6.2.1** The dynamometer inertia for each wheel is equivalent to the load on the wheel with the axle loaded to its gross axle weight rating.

**S6.2.2** [The ambient temperature is between 75°F. and 100°F. (37 F.R. 3905—February 24, 1972. (Effective: 9/1/74)]

**S6.2.3** [Air at ambient temperature is directed uniformly and continuously over the brake drum or disc at a velocity of 2,200 feet per minute. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)]

**S6.2.4** [The temperature of each brake is measured by a single plug type thermocouple installed in the center of the lining surface of the most heavily loaded shoe or pad as shown in Figure II. The thermocouple is outside any center groove. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)]

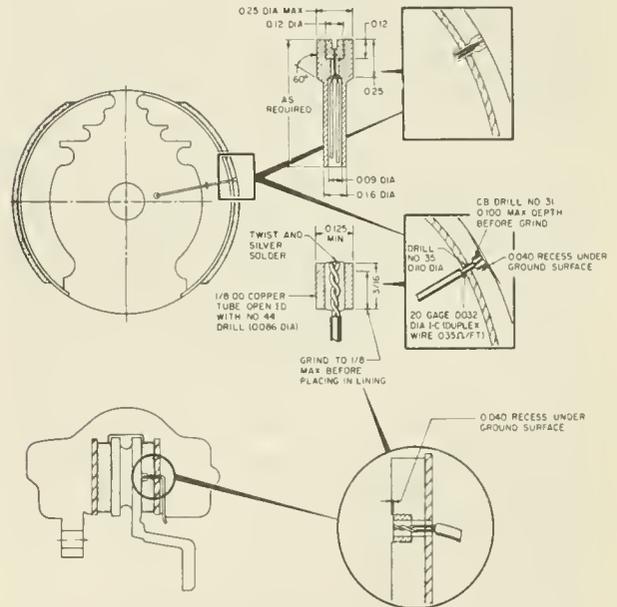
**S6.2.5** [The rate of brake drum or disc rotation on a dynamometer corresponding to the rate of rotation on a vehicle at a given speed is calculated by assuming a tire radius equal to the static loaded radius specified by the tire manufacturer. (37 F.R. 3905—February 24, 1974. Effective: 9/1/74)]

**S6.2.6** [Brakes are burnished before testing as follows: Place the brake assembly on an inertia dynamometer and adjust the brake as recommended by the brake manufacturer. Make 200 stops from 40 mph at a deceleration of 10 fpsps, with an initial brake temperature on each stop of not less than 315°F. and not more than 385°F. Make 200 additional stops from 40 mph

at a deceleration of 10 fpsps with an initial brake temperature on each stop of not less than 450°F. and not more than 550°F. After burnishing, the brakes are adjusted as recommended by the brake manufacturer. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)]

**S6.2.7** [The brake temperature is increased to a specified level by conducting one or more stops from 40 mph at a deceleration of 10 fpsps. The brake temperature is decreased to a specified level by rotating the drum or disc at a constant 30 mph. (37 F.R. 3905—February 24, 1972. Effective: 9/1/74)]

**FIGURE 2  
THERMOCOUPLE INSTALLATION**



**36 F.R. 3817  
February 27, 1971**

NOTE: These amendments will not be effective until September 1, 1976, but are being published at this time for the convenience of the subscriber.

**S5.7 [Emergency brake system—trucks and buses.** Each vehicle shall be equipped with an emergency brake system which, under the conditions of S6.1, conforms to the requirements of S5.7.1 through S5.7.4. The emergency brake system may be a part of the service brake system or incorporate portions of the service brake and parking brake systems. (40 F.R. 2989—January 17, 1975. Effective: 9/1/76) ]

**S5.7.1 [Emergency brake system performance.** When stopped six times for each combination of weight and speed specified in S5.3.1.1 on a road surface with a skid number of 75, with a single failure in the service brake system of a part designed to contain compressed air or brake fluid (except failure of a common valve, manifold brake fluid housing, or brake chamber housing), the vehicle shall stop at least once in not more than the distance specified in Column 3 of Table II, measured from the point at which movement of the service brake control begins, without any part of the vehicle leaving the roadway, except that a truck-tractor tested at its unloaded vehicle weight plus 500 pounds shall stop at least once in not more than the distance specified in Column 4 of Table II. (40 F.R. 2989—January 17, 1975. Effective: 9/1/76) ]

**S5.7.2 [Emergency brake system operation.** The emergency brake system shall be applied and released, and be capable of modulation, by means of the service brake control. (40 F.R. 2989—January 17, 1975. Effective: 9/1/76) ]

**[S5.7.3. Emergency brake system application and release.** With all air reservoirs charged to 100 psi, and with a failure as specified in S5.7.1, the emergency brake system shall, by means of the service brake control, be capable of not less than two applications and releases, as determined by brake chamber air pressure of 60 psi or more during the pressure phase of operation, and brake chamber air pressure of not more than 1 psi during the pressure release phase of operation. (40 F.R. 2989—January 17, 1975. Effective: 9/1/76) ]

**[S5.7.4 Towing vehicle emergency brake requirements.** In addition to meeting the other requirements of S5.7, a vehicle designed to tow another vehicle equipped with air brakes shall—

(a) In the case of a truck-tractor in the unloaded condition and a single unit truck which is capable of towing an air-brake equipped vehicle and is loaded to gross vehicle weight rating, be capable of meeting the requirements of S5.7.1 by operation of the service brake control only, when the single failure in the service brake system consists of the trailer air control line or the trailer air supply line and air control line from the towing vehicle being vented to the atmosphere in accordance with S6.1.14;

(b) In the case of a truck-tractor loaded to gross vehicle weight rating, be capable of meeting S5.7.1 by operation of the service brake control only, when the single failure in the service brake system consists of the air control line from the towing vehicle being vented to the atmosphere in accordance with S6.1.14; and

(c) Be capable of modulating the air in the supply or control line to the trailer by means of the service brake control with a single failure as specified in S5.7.1. (40 F.R. 2989—January 17, 1975. Effective: 9/1/76) ]

**[S6.1.14** In testing the emergency braking system of towing vehicles under S5.7.4(a) and S5.7.4(b) the hose(s) is vented to the atmosphere at any time not less than 1 second and not more than 1 minute before the emergency stop begins, while the vehicle is moving at the speed from which the stop is to be made and any manual control for the towing vehicle protection system is in the position to supply air and brake control signals to the vehicle being towed. No brake application is made from the time the line(s) is vented until the emergency stop begins and no manual operation of the parking brake system or towing vehicle protection system occurs from the time the line(s) is vented until the stop is completed. (40 F.R. 2989—January 17, 1975. Effective: 9/1/76) ]

## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 122

### Motorcycle Brake Systems

This notice amends Part 571 of Title 49, Code of Federal Regulations, to add a new Motor Vehicle Safety Standard No. 122 (49 CFR § 571.122) that establishes performance requirements for motorcycle brake systems. A notice of proposed rulemaking on this subject was published on March 24, 1971 (36 F.R. 5516).

The safety afforded by a motorcycle's braking system is determined by several factors, including stopping distance, linear stability while stopping, fade resistance, and fade recovery. A safe system should have features that both guard against malfunction and stop the vehicle should a malfunction occur in the normal service system. Standard No. 122 covers each of these aspects of brake safety, establishing equipment and performance requirements appropriate for two-wheeled and three-wheeled motorcycles. These requirements do not differ greatly from the proposals, and comments received in response to the notice have been considered in promulgating the rule.

*I. Equipment.* Each motorcycle is required to have either a split hydraulic service brake system or two independently actuated service brake systems. The latter system encompasses a hydraulic service brake system combined with a hand operated parking brake system. Although several objections were received to the split hydraulic service brake system proposal, the NHTSA has determined that partial failure braking features are necessary in the event of a hydraulic pressure loss in the normal service brake system. If a motorcycle has a hydraulic service brake system, it must also have a reservoir for each master cylinder, and a master cylinder reservoir label advising the proper grade of DOT brake fluid. If the service brake system is a split hydraulic type, a failure indicator lamp is required.

Additionally, three-wheeled motorcycles must be equipped with a friction type parking brake with a solely mechanical means to retain engagement. Some commenters felt that pin or pawl type brakes should be permitted. The Administration does not know of an impact test adequate to test the strength of a mechanical lock, and pin or pawl type brakes, prone to failure upon impact, have been found to be inadequate. The NHTSA concurs, however, with comments objecting to the proposed parking brake indicator lamp, and has determined that the safety benefits involved are negligible in comparison with the expense of providing it.

*II. Performance.* Conformity with performance requirements will be determined by subjecting motorcycles to a series of road tests. Vehicles must demonstrate the effectiveness of their service brake systems by stopping within specified distances from 30 mph, 60 mph, 80 mph, and from a speed divisible by 5 mph that is 4 mph to 8 mph less than the maximum vehicle speed.

Motorcycles will demonstrate fade resistance of their braking systems by making recovery stops subsequent to a series of fade stops from 60 mph. The hand lever force for the final recovery stop must be within plus 20 pounds and minus 10 pounds of the baseline check average force. This is a modification of the proposed "plus 10 pounds or 20 percent, whichever is less, and minus 20 percent," based upon comments requesting the substitution of absolute values. The same modification is made in the final water recovery stop. The maximum speed fade and recovery proposal has not been adopted, as two and three-wheeled motor vehicles do not have the inherent cooling problems that braking systems on four-wheeled vehicles experience. Retention of the 60 mph stops will ensure that the system maintain adequate stopping ability despite

the high temperatures created by prolonged use, and may reveal undesirable brake lining characteristics such as glazing.

The test sequence has been rearranged so that the parking brake system test for three-wheeled motorcycles occurs immediately before the water recovery test. At this point in the test sequence the brakes will have been fully burnished, and the test will therefore be more indicative of service performance. Parking brake application forces have been modified from the proposal, and specify a maximum applied force of not more than 90 pounds for a foot-operated system and 55 pounds for a hand-operated system. These forces are identical to those specified in S6.10, the test condition on brake actuation forces, and result in a uniformity of brake actuation forces throughout the standard.

Finally, a motorcycle must demonstrate acceptable stopping performance after its brake system has been exposed to water. Comments expressed dissatisfaction with the proposed test procedure, stating that complete immersion of the brakes is not indicative of the manner in which they become wet in actual service. NHTSA agrees that poor braking performance often is not attributable to complete immersion, but rather to prolonged exposure to a constant spray from the road surface. However, there is no basis on which to specify a test procedure reflecting these conditions, and the immersion procedure has, therefore, been retained.

At the end of the test procedure the brake system must pass a durability inspection.

All stops must be made without lockup of any wheel. Two-wheeled motorcycles must remain within an 8-foot-wide lane during stops (modified from the proposed 6-foot-wide lane), and three-wheeled ones within a lane equal to vehicle width plus five feet. Some commenters asked that tests be performed with the clutch engaged. However, the effectiveness of a brake system in bringing a vehicle to a stop within required distances is more accurately judged by requiring that stops be made with the clutch disengaged; there is less reliance on extraneous factors such as use of engine retardation as a braking assist and the varying skills of individual drivers when shifting downward through gears.

Regarding test conditions, comments were received that it is unnecessary for both braking systems of a two-wheeled motorcycle to be within the specified pedal and lever force range simultaneously. The Administration did not concur with these comments. The safety of cyclists requires not only that motorcycles be capable of stopping within specified distances, but also that this capability be demonstrated when reasonable forces are applied to the brake lever and pedal.

Several commenters also objected to the "impossibility" of the test condition that "the wind velocity is zero." The comment reveals misunderstanding of the significance of the test conditions. A manufacturer may test for compliance by running the tests under any wind conditions that are adverse to the vehicle; obviously if the vehicle meets the requirements under adverse wind conditions, it will meet them under no-wind conditions. Similarly, the Government will prove noncompliance by orienting the test runs so that wind conditions are favorable to the vehicle. Thus, the condition uniquely allows testing under whatever wind conditions are present. It is retained as the most practicable and least burdensome test method for all parties.

*Effective date:* September 1, 1973. Because of the necessity to allow manufacturers sufficient production leadtime, it is found for good cause shown, that an effective date later than one year after issuance is in the public interest.

In consideration of the foregoing, Title 49, Code of Federal Regulations, is amended by adding § 571.122, Motor Vehicle Safety Standard No. 122, *Motorcycle Brake System*.

This notice is issued under the authority of section 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on: March 1, 1972.

Charles H. Hartman  
Acting Administrator

37 F.R. 5033  
March 9, 1972

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 122

### Motorcycle Brake Systems

(Docket No. 1-3; Notice No. 4)

This notice responds to petitions for reconsideration of Motor Vehicle Safety Standard No. 122 (49 CFR § 571.122), and changes the effective date of the standard to January 1, 1974.

Motor Vehicle Safety Standard No. 122 establishing requirements for motorcycle braking equipment, stopping distance, brake system fade and recovery, and wet brake recovery, effective September 1, 1973, was published on March 9, 1972 (37 F.R. 5033). Thereafter, pursuant to 49 CFR § 553.35, petitions for reconsideration of the rule were filed by Japan Automobile Manufacturers Association, Inc. ("JAMA"), and Cushman Motors ("Cushman") through counsel. In response to these petitions, the effective date of the standard is being changed. The Administrator has declined to grant requested relief from other requirements of the standard.

1. *Lining inspection requirement.* S5.1.5 of Standard No. 122 requires a brake system to be installed "so that the lining thickness of drum brake shoes may be visually inspected, either directly or by use of a mirror without removing the drums. . . ." JAMA has petitioned that the word "indirectly" be substituted for "by use of a mirror" in order to allow use of a device such as a wear indicator on the outside of front and rear brake panels. The NHTSA considers wear indicators to be a "direct" method of visual inspection since the extent of lining wear may be determined without removal of the drums. There is no need to amend the Standard to allow their use, and JAMA's petition is denied.

2. *Brake wetting procedure.* The procedure for wetting the brakes prior to testing for wet brake recovery (S7.10.2) specifies the complete immersion of brake assemblies.

JAMA has petitioned that a water trough be substituted, with water depth varying according to the cycle's tire rim size, through which the cycle would be driven for 2 minutes at a speed of 10 m.p.h. JAMA notes that this is similar to the procedure NHTSA proposed in Docket No. 70-27, *Hydraulic Brake Systems*, and commented that the same procedure should apply to all motor vehicles.

The NHTSA has determined that the inherent instability of two- and three-wheeled vehicles under wet road conditions justifies a different test procedure. The difference in configuration between motorcycles and four-wheeled vehicles is distinct enough that there is no assurance motorcycle brakes will be wet, or wet uniformly, by the trough method. It is recognized that neither method may represent the way brakes become wet under actual road conditions, but immersion of brake assemblies has been determined to be the more efficiently reproducible method of establishing a condition under which motorcycle brake system performance may be evaluated. The petition is denied.

3. *Stopping distance.* JAMA and Cushman petitioned for a relaxation of the stopping distance requirements of Table I. JAMA recommended that the stopping distance values in Column II (Preburnish effectiveness, partial mechanical system) and Column III (Effectiveness—total system) up to and including 70 m.p.h. be the stopping distances specified in SAE Recommended Practice J109a. This would mean an increase in range of 39-136 feet for the preburnish stopping distances, and 1-15 feet for total system effectiveness over the values of Standard No. 122. JAMA alleges that stopping distance is highly dependent upon the rider's

Effective: January 1, 1974

ability to control the brakes, and it requested the increased stopping distances to compensate for variations in the rider's skill.

Cushman, whose three-wheeled vehicles have a top speed of 38 m.p.h., requests that all stopping distances from 30 m.p.h. and 35 m.p.h. be modified, alleging that the only way it can meet the stopping distances is by redesigning its vehicle. Cushman also states that it is unaware of any incident where the stopping distances achieved by its present vehicle have become a factor in an accident, and that accordingly there is no need for the stopping distances set forth in Table I, as they apply to Cushman, in order to protect the public.

The NHTSA recognizes that its standards on braking (the forthcoming amendment to Standard No. 105, *Hydraulic Brake Systems*, Standard No. 121, *Air Brake Systems*, and Standard No. 122, *Motorcycle Brake Systems*) impose stringent requirements on the manufacturers of all types of vehicles, and that, in some instances, redesign may be necessary. But because of the ever increasing numbers of vehicles on urban and interstate roadways, and of passenger-miles traveled, the NHTSA considers improved braking systems to be the highest priority in its program of accident avoidance. Prompt and accurate braking response is deemed especially critical in providing a margin by which the vulnerable motorcyclist may escape death or serious injury. While the fatality rate for all motor vehicle occupants fell 3.8 per cent in 1970, it rose 18.9 per cent for motorcycle riders. Motorcycles account for less than 2.3 per cent of total vehicle registrations, but they are involved in 3.6 per cent of all fatal accidents. Therefore, the necessity that the industry achieve the full capability of the present

state of the art has been found to outweigh the problems caused the individual manufacturers by compliance.

The NHTSA recognizes the effect of rider control upon stopping distance in the wording of S7, which deems stopping distance requirements met if only one of the specified number of stops occurs within the maximum allowable stopping distances. Comments to Docket No. 1-3 indicate that it is clearly reasonable and practicable to require motorcycles to meet the stopping distances adopted for Standard No. 122. The petitions of JAMA and Cushman are denied.

4. *Effective date.* JAMA has requested a 4 month delay in the effective date of Standard No. 122 because model changeover time for Japanese manufacturers extends through autumn to the end of the year. It estimates that only 50 per cent of the industry could be brought into compliance by September 1, 1973. In light of the design changes that may be necessitated, the Administrator finds this request reasonable and that for good cause shown a later effective date is in the public interest. The effective date of Standard No. 122 is hereby changed to January 1, 1974.

The notice is issued pursuant to the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on June 9, 1972.

Douglas W. Toms  
Administrator

37 F.R. 11973  
June 16, 1972

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 122

### Motorcycle Brake Systems

(Docket No. 1-3; Notice 6)

This notice amends Motor Vehicle Safety Standard No. 122, *Motorcycle Brake Systems*, 49 CFR 571.122, to modify the master cylinder labeling and the wetting procedure for the water recovery test, effective January 1, 1974.

The amendment is based upon a notice published December 15, 1972, (37 F.R. 26739). The NHTSA proposed a change in the wording of the master cylinder reservoir label which would be identical to that specified in Motor Vehicle Safety Standard No. 105a, *Hydraulic Brake Systems* (37 F.R. 17970). In addition, a change in the wetting procedure for the water recovery test was proposed to require sequential immersion of the front and rear brake assemblies in lieu of simultaneous immersion.

The comments received generally supported the proposal. Some minor changes were requested, and Standard No. 122 is being amended accordingly. The reservoir labeling requirements have been modified in format in a manner consistent with recent amendments to Standard No. 105a (38 F.R. 13017). The height of the lettering has been retained at 3/32 of an inch. In order to avoid any misinterpretation, it is the NHTSA's intent to have the label completed with DOT and the grade of fluid designed for use in the system and not a manufacturer's brand name and number. If, however, silicone-based or petroleum-based fluids are appropriate for the system design specific fluids may be designated until a DOT grade and performance requirements have been specified. A contrast in color will be required only of printed labels. For this purpose, it has been decided that raised or lowered

letters will provide a sufficient degree of legibility.

Finally, based on a comment made by the Japan Automobile Manufacturers Association, Inc. (JAMA), the wetting procedure for the water recovery test has been changed to extend the maximum testing time from 5 minutes to 7 minutes. JAMA stated that immersion of the rear brake first would still create engine stall problems if the water were allowed to enter the engine through the muffler(s) during the front brake assembly immersion period. The NHTSA feels strongly that the front brake should be immersed last due to potential instabilities created by a "grabbing" front brake. The extra time which has been allotted should be sufficient for manufacturers to provide protection for the exhaust system, thereby alleviating the problem of engine stall, and providing a measure of relief for those who considered the 5-minute period as excessively short.

In consideration of the foregoing, 49 CFR § 571.122, Motor Vehicle Safety Standard No. 122, is amended. . . .

*Effective date:* January 1, 1974.

(Secs. 103, 112, 119 Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1407; delegation of authority at 38 F.R. 12147)

Issued on May 30, 1973.

James E. Wilson  
Associate Administrator  
Traffic Safety Programs

**38 F.R. 14753**  
**June 5, 1973**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 122

(Docket No. 74-16; Notice 2)

This notice amends 49 CFR 571.108, 571.122, and 571.123, Motor Vehicle Safety Standards Nos. 108, 122, and 123, to modify current requirements that apply to motor-driven cycles.

Interested persons have been afforded an opportunity to participate in the making of the amendment by a notice of proposed rulemaking published on April 12, 1974 (39 F.R. 13287) and due consideration has been given to all comments received in response to the notice, insofar as they relate to matters within its scope.

The prior notice responded to petitions by Cycles Peugeot, Ateliers de la Motobecane, and S.I.N.F.A.C., manufacturers, and Bermuda Bikes, Inc., and Robert F. Smith, retail dealers. The notice proposed that a motor-driven cycle whose speed attainable in 1 mile is 30 mph or less need not be equipped with turn signal lamps, and may be equipped with a stop lamp with one-half the photometric output otherwise required. Braking fade and recovery requirements also would not apply to these low-speed vehicles. Maximum stopping distance values for the various tests should be added for test speeds of 25, 20, and 15 mph. Finally, a braking control on the left handlebar would be a permissible alternative to the required right foot braking control.

The comments received addressed both areas of performance covered in the proposal, and areas where no standards currently exist, such as motors, transmissions, pedals, and a request for exemption from Standard No. 119, *Tires for Vehicles Other Than Passenger Cars*. As these latter comments cover matters beyond the scope of the proposal, this notice does not discuss them. The agency, however, has been formally petitioned for rulemaking covering transmissions and Standard No. 119, and will respond to the petitioners in the near future.

The decision by NHTSA not to establish a separate category of vehicle was objected to by

some commenters. In support of their request, they argued that the majority of motor-driven cycles have engines producing only 1.5 to 2 horsepower, and consequent low maximum speeds, reducing the need for forward lighting that is currently required of these vehicles. Petitioners submitted no data justifying their request. The NHTSA, however, intends to study the matter of forward lighting for low-powered two-wheeled vehicles through a research contract with the University of Michigan. When the contract is completed the agency will then decide whether further rulemaking is warranted.

The proposal distinguished motor-driven cycles on the basis of maximum speed attainable in 1 mile, rather than on horsepower, and the value selected, 30 mph, fell within the maximum (40 mph) and minimum (20 mph) suggested by commenters. The NHTSA has concluded therefore that the distinction should be adopted as proposed.

Some manufacturers requested restrictive controls on power plant output, apparently in fear that the engine of a vehicle with a top speed of 30 mph or less could be modified to exceed that speed, and therefore cause the vehicle to no longer comply with the Federal standards. This agency has not found that course of action to be practicable. The various ways to modify a vehicle after purchase cannot be anticipated or prevented at the manufacturer level. On the other hand, the great majority of consumers use their vehicles in the form in which they were purchased. The motor-driven cycle category itself contains a limitation of 5 horsepower, which will be applicable to the special lighting modifications. In the NHTSA's judgment, modifications by consumers and the consequent equipment requirements should continue to be regulated at the State level.

The fact that the agency took no action to propose a reduction in existing headlamp requirements for motor-driven cycles was criticized by several manufacturers as unduly restrictive because of the low speed and power output of their vehicles. No justification has been shown for such a change. Motor-driven cycles therefore must have sufficient generating and/or battery capacity to meet the headlamp requirements.

There was no substantive objection to the actual proposals for omission of turn signals, reduced stop lamp photometrics, relief from brake fade requirements, inclusion of maximum allowable stopping distances for low speeds, and rear brake control placement. Accordingly, the standards are being amended in the manner proposed.

Standard No. 122 is also being amended to delete the final effectiveness test (S5.5) for those motor-driven cycles excused from the fade and recovery requirements. The purpose of the final effectiveness test is to check the stopping ability of the vehicle after the fade and recovery tests. Since this requirement has been eliminated for motor-driven cycles of low top-speed, the final effectiveness test is redundant, and an unneces-

sary duplication of the second effectiveness test. No safety purpose is served by its retention. Language is also added to the fade and recovery and final effectiveness test procedures (S7.6, S7.7, and S7.8), making it clear that they do not apply to motor-driven cycles whose speed attainable in 1 mile is 30 mph or less.

In consideration of the foregoing, 49 CFR Part 571 is amended . . . .

Effective date: October 14, 1974. As the amendments allow new options for compliance, relieve restrictions, and impose no additional burdens on regulated persons, it is found for good cause shown that an effective date earlier than 180 days after issuance of the amendments is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on September 6, 1974.

James B. Gregory  
Administrator

**39 F.R. 32914**  
**September 12, 1974**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 122****Motorcycle Brake Systems**

This notice corrects an error in paragraph S7.8.1 of 49 CFR 571.122, Motor Vehicle Safety Standard No. 122, *Motorcycle Brake Systems*.

On March 24, 1971 NHTSA proposed (36 FR 5516) as part of its anticipated motorcycle braking standard, that the final effectiveness test "repeat S7.6 including S7.3.1". Proposed S7.6 was the service brake system second effectiveness test. When Standard No. 122 was issued on March 9, 1972 (37 F.R. 5033) the proposal was adopted, in S7.8.1, that the final effectiveness test "Repeat S7.6 including S7.3.1". However, in the development of the final rule the test sequence was rearranged and the second effectiveness test had become S7.5. Through oversight, a corresponding change was not made in the final effectiveness test provisions. Accordingly the change is being made by this notice.

In consideration of the foregoing, paragraph S7.8.1 of 49 CFR § 571.122, Motor Vehicle Safety Standard No. 122 is revised to read "S7.8.1 *Service brake system*. Repeat S7.5 including S7.3.1".

*Effective date:* December 10, 1974. Because the notice corrects an error and creates no additional burden upon any person, it is found for good cause shown that an immediate effective date is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51)

Issued on December 4, 1974.

James B. Gregory  
Administrator

**39 F.R. 43075**  
**December 10, 1974**



## MOTOR VEHICLE SAFETY STANDARD NO. 122

### Motorcycle Brake Systems

**S1. Scope.** This standard specifies performance requirements for motorcycle brake systems.

**S2. Purpose.** The purpose of the standard is to insure safe motorcycle braking performance under normal and emergency conditions.

**S3. Application.** This standard applies to motorcycles.

**S4. Definitions.**

“Braking interval” means the distance measured from the start of one brake application to the start of the next brake application.

“Initial brake temperature” means the temperature of the hottest service brake of the vehicle 0.2 mile before any brake application.

“Skid number” means the frictional resistance of a pavement measured in accordance with American Society for Testing and Materials Method E-274-65T at 40 mph omitting water delivery as specified in paragraph 7.1 of that method.

“Speed attainable in 1 mile” means the speed attainable by accelerating at maximum rate from a standing start for 1 mile, on a level surface.

“Stopping distance” means the distance traveled by a vehicle from the start of the brake application to the point where the vehicle stops.

“Split service brake system” means a brake system consisting of two or more subsystems actuated by a single control designed so that a leakage-type failure of a pressure component in a single subsystem (except structural failure of a housing that is common to all subsystems) shall not impair the operation of the other subsystem(s).

**S.5 Requirements.** Each motorcycle shall meet the following requirements under the conditions specified in S6, when tested according to the procedures and in the sequence specified in S7. Corresponding test procedures of S7 are indicated in parentheses. If a motorcycle is in-

TABLE I  
STOPPING DISTANCES FOR EFFECTIVENESS, FADE AND PARTIAL SYSTEM TESTS

Stopping distance, feet				
Effectiveness tests				
Vehicle test speed m.p.h.	Preburnish effectiveness total system (S5.2.1)	Preburnish effectiveness partial mechanical systems (S5.2.2)	Effectiveness total system (S5.4) (S5.7.1)	Effectiveness partial hydraulic systems (S5.7.2)
	I	II	III	IV
15	13	30	11	25
20	24	54	19	44
25	37	84	30	68
30	54	121	43	97
35	74	165	58	132
40	96	216	75	173
45	121	273	95	218
50	150	337	128	264
55	181	407	155	326
60	216	484	185	388
65	-----	-----	217	415
70	-----	-----	264	527
75	-----	-----	303	606
80	-----	-----	345	689
85	-----	-----	389	788
90	-----	-----	484	872
95	-----	-----	540	971
100	-----	-----	598	1076
105	-----	-----	659	1188
110	-----	-----	723	1302
115	-----	-----	791	1423
120	-----	-----	861	1549

[(39 F.R. 32914—September 12, 1974. Effective: 10/14/74)]

TABLE II  
BRAKE TEST SEQUENCE AND REQUIREMENTS

SEQUENCE	L.C.	Test procedure	Requirements
1.	Instrumentation check -----	S7.2	
2.	First (Preburnish) effectiveness test:		
	(a) Service brake system -----	S7.3.1	S5.2.1
	(b) Partial service brake system ----	S7.3.2	S5.2.2
3.	Burnish procedure -----	S7.4	
4.	Second effectiveness test -----	S7.5	S5.3
5.	First fade and recovery test -----	S7.6	S5.4
6.	Reburnish -----	S7.7	
7.	Final effectiveness test:		
	(a) Service brake system -----	S7.8.1	S5.5.1
	(b) Partial service brake system ----	S7.8.2	S5.5.2
8.	Parking brake test (three-wheeled motorcycles only) ----	S7.9	S5.6
9.	Water recovery test -----	S7.10	S5.8
10.	Design durability -----	S7.11	S5.8

capable of attaining a specified speed, its service brakes shall be capable of stopping the vehicle from the multiple of 5 mph that is 4 mph to 8 mph less than the speed attainable in 1 mile, within stopping distances that do not exceed the stopping distances specified in Table 1.

**55.1 Required equipment—split service brake system.** Each motorcycle shall have either a split service brake system or two independently actuated service brake systems.

**55.1.1 Mechanical service brake system.** Failure of any component in a mechanical service brake system shall not result in a loss of braking ability in the other service brake system on the vehicle.

**55.1.2 Hydraulic service brake system.** A leakage failure in a hydraulic service brake system shall not result in a loss of braking ability in the other service brake system on the vehicle. Each motorcycle equipped with a hydraulic brake system shall have the equipment specified in S5.1.2.1 and S5.1.2.2.

**55.1.2.1 Master cylinder reservoirs.** Each master cylinder shall have a separate reservoir for each brake circuit, with each reservoir filler opening having its own cover, seal, and cover retention device. Each reservoir shall have a minimum capacity equivalent to one and one-half times the total fluid displacement resulting when all the wheel cylinders or caliper pistons serviced by the reservoir move from a new lining, fully retracted position to a fully worn, fully applied position. Where adjustment is a factor, the worst condition of adjustment shall be used for this measurement.

**55.1.2.2 [Reservoir labeling.** Each motorcycle shall have a brake fluid warning statement that reads as follows, in letters at least  $\frac{3}{32}$  of an inch high:

**“WARNING:** Clean filler cap before removing. Use only \_\_\_\_\_ fluid from a sealed container.”  
(Inserting the recommended type of brake fluid as specified in 49 CFR § 571.116, e.g. DOT 3)

The lettering shall be—

(a) Permanently affixed, engraved or embossed;

(b) Located so as to be visible by direct view, either on or within 4 inches of the brake fluid reservoir filler plug or cap; and

(c) Of a color that contrasts with its background, if it is not engraved or embossed. (38 F.R. 14753—June 5, 1973. Effective: 1/1/74)】

**55.1.3 Split service brake system.** In addition to the equipment required by S5.1.2 each motorcycle equipped with a split service brake system shall have a failure indicator lamp as specified in S5.1.3.1.

**55.1.3.1. Failure indicator lamp.**

(a) One or more electrically operated service brake system failure indicator lamps that is mounted in front of and in clear view of the driver, and that is activated—

(1) In the event of pressure failure in any part of the service brake system, other than a structural failure of either a brake master cylinder body in a split integral body type master cylinder system or a service brake system failure indicator body, before or upon application of not more than 20 pounds of pedal force upon the service brake.

(2) Without the application of pedal force, when the level of brake fluid in a master cylinder reservoir drops to less than the recommended safe level specified by the manufacturer or to less than one-half the fluid reservoir capacity, whichever is the greater.

(b) All failure indicator lamps shall be activated when the ignition switch is turned from the “off” to the “on” or to the “start” position.

(c) Except for the momentary activation required by S5.1.3.1(b), each indicator lamp, once activated, shall remain activated as long as the condition exists, whenever the ignition switch is in the “on” position. An indicator lamp activated when the ignition is turned to the “start” position shall be deactivated upon return of the switch to the “on” position unless a failure exists in the service brake system.

(d) Each indicator lamp shall have a red lens with the legend “Brake Failure” on or adjacent to it in letters not less than  $\frac{3}{32}$  of an inch high that shall be legible to the driver in daylight when lighted.

**55.1.4 Parking Brake.** Each three-wheeled motorcycle shall be equipped with a parking brake of a friction type with a solely mechanical means to retain engagement.

**55.1.5 Other requirements.** The brake system shall be installed so that the lining thickness of drum brake shoes may be visually inspected, either directly or by use of a mirror without removing the drums, and so that disc brake friction lining thickness may be visually inspected without removing the pads.

**55.2 Service Brake System.** First (pre-burnish) effectiveness.

**55.2.1 Service brake system.** The service brakes shall be capable of stopping the motorcycle from 30 mph and 60 mph within stopping distances which do not exceed the stopping distances specified in Column I of Table 1 (S7.3.1).

**55.2.2 Partial service brake system.** Each independently actuated service brake system on each motorcycle shall be capable of stopping the motorcycle from 30 mph and 60 mph within stopping distances which do not exceed the stopping distances specified in Column II of Table I (S7.3.2).

**55.3 Service brake system—second effectiveness.** The service brakes shall be capable of stopping the motorcycle from 30 mph, 60 mph, 80 mph, and the multiple of 5 mph that is 4 mph to 8 mph less than the speed attainable in 1 mile if this speed is 95 mph or greater, within stopping distances that do not exceed the stopping distances specified in Column III of Table I (S7.5).

**55.4 Service brake system—fade and recovery.** [These requirements do not apply to a motor-driven cycle whose speed attainable in 1 mile is 30 mph or less. (39 F.R. 32914—September 12, 1974. Effective: 10/14/74)]

**55.4.1 Baseline check—minimum and maximum pedal forces.** The pedal and lever forces used in establishing the fade baseline check average shall be within the limits specified in S6.10 (S7.6.1).

**55.4.2 Fade.** Each motorcycle shall be capable of making 10 fade stops from 60 mph at not less than 15 fpsps for each stop (S7.6.2).

**55.4.3 Fade recovery.** Each motorcycle shall be capable of making five recovery stops with a pedal force that does not exceed 90 pounds, and a hand lever force that does not exceed 55 pounds

for any of the first four recovery stops and that for the fifth recovery stop is within plus 20 pounds and minus 10 pounds of the fade test baseline check average force (S7.6.3).

**55.5 Service brake system—final effectiveness.** [These requirements do not apply to a motor-driven cycle whose speed attainable in 1 mile is 30 mph or less. (39 F.R. 32914—September 12, 1974. Effective: 10/14/74)]

**55.5.1 Service brake system.** The service brakes shall be capable of stopping the motorcycle in a manner that complies with S5.3 (S7.8.1).

**55.5.2 Hydraulic service brake system—partial failure.** In the event of a pressure component leakage failure, other than a structural failure of either a brake master cylinder body in a split integral body type master cylinder system or a service brake system failure indicator body, the remaining portion of the service brake system shall continue to operate and shall be capable of stopping the motorcycle from 30 mph and 60 mph within stopping distances that do not exceed the stopping distances specified in Column IV of Table I (S7.8.2).

**55.6 Parking brake system.** The parking brake system shall be capable of holding the motorcycle, for 5 minutes, in both forward and reverse directions, on a 30 percent grade, with an applied force of not more than 90 pounds for a foot-operated system, and 55 pounds for hand-operated system (S7.9).

**55.7 Service brake system—water recovery.**

**55.7.1 Baseline check.** The pedal and lever forces used in establishing the water recovery baseline check average shall be within the limits specified in S6.10 (S7.10.1).

**55.7.2 Water recovery test.** Each motorcycle shall be capable of making five recovery stops with a pedal force that does not exceed 90 pounds, and a hand lever force that does not exceed 55 pounds, for any of the first four recovery stops, and that for the fifth recovery stop, is within plus 20 pounds and minus 10 pounds of the baseline check average force (S7.10.2).

**55.8 Service brake system design durability.** Each motorcycle shall be capable of completing all braking requirements of S5 without detachment of brake linings from the shoes or pad,

detachment or fracture of any brake system components, or leakage of fluid or lubricant at the wheel cylinder, and master cylinder reservoir cover, seal, or retention device (S7.11).

**S6 Test conditions.** The requirements of S5 shall be met under the following conditions. Where a range of conditions is specified, the motorcycle shall be capable of meeting the requirements at all points within the range.

**S6.1 Vehicle weight.** Motorcycle weight is unloaded vehicle weight plus 200 pounds (including driver and instrumentation), with the added weight distributed in the saddle or carrier if so equipped.

**S6.2 Tire inflation pressure.** Tire inflation pressure is the pressure recommended by the manufacturer for the vehicle weight specified in paragraph S6.1.

**S6.3 Transmission.** Unless otherwise specified, all stops are made with the clutch disengaged.

**S6.4 Engine.** Engine idle speed and ignition timing settings are according to the manufacturer's recommendations. If the vehicle is equipped with an adjustable engine speed governor, it is adjusted according to the manufacturer's recommendation.

**S6.5 Ambient temperature.** The ambient temperature is between 32° and 100° F.

**S6.6 Wind velocity.** The wind velocity is zero.

**S6.7 Road surface.** Road tests are conducted on level roadway having a skid number of 75. The roadway is 8 feet wide for two-wheeled motorcycles, and overall vehicle width plus 5 feet for three-wheeled motorcycles.

**S6.8 Vehicle position.** The motorcycle is aligned in the center of the roadway at the start of each brake application. Stops are made without any part of the motorcycle leaving the roadway and without lockup of any wheel.

**S6.9 Thermocouples.** The brake temperature is measured by plug-type thermocouples installed in the approximate center of the facing length and width of the most heavily loaded shoe or disc pad, one per brake, as shown in Figure 1.

**S6.10 Brake actuation forces.** Except for the requirements of the fifth recovery stop in S5.4.3

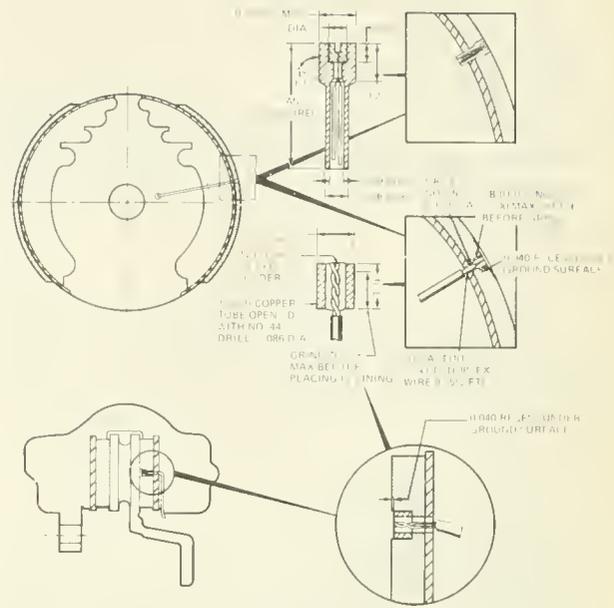
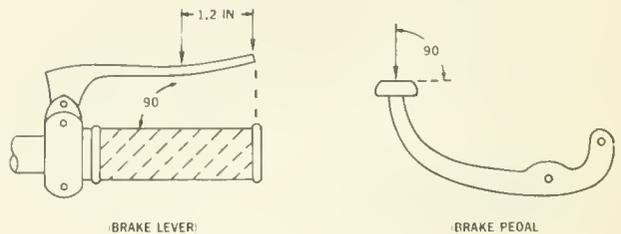


FIGURE 1  
TYPICAL PLUG TYPE  
THERMOCOUPLE INSTALLATIONS

and S5.7.2 (S7.6.3 and S7.10.2) the hand lever force is not less than five and not more than 55 pounds and the foot pedal force is not less than 10 and not more than 90 pounds. The point of initial application of the lever forces is 1.2 inches from the end of the brake lever grip. The direction of the force is perpendicular to the handle grip on the plane along which the brake lever rotates, and the point of application of the pedal force is the center of the foot contact pad of the brake pedal. The direction of the force is perpendicular to the foot contact pad on the plane along which the brake pedal rotates, as shown in Figure 2.

FIG. 2 DIRECTION OF FORCE



**S7. Test procedures and sequence.** Each motorcycle shall be capable of meeting all the requirements of this standard when tested according to the procedures and in the sequence set forth below without replacing any brake system part, or making any adjustments to the brake system other than as permitted in S7.4. A motorcycle shall be deemed to comply with S5.2, S5.3 and S5.5 if at least one of the stops specified in S7.3, S7.5 and S7.8 is made within the stopping distances specified in Table I.

**S7.1 Braking warming.** If the initial brake temperature for the first stop in a test procedure (other than S7.10) has not been reached, heat the brakes to the initial brake temperature by making up to 10 stops from 30 mph at a deceleration of not more than 10 fpsps. On independently operated brake systems, the coldest brake shall be within 10° F. of the hottest brake.

**S7.2 Prefest instrumentation check.** Conduct a general check of test instrumentation by making not more than 10 stops from a speed of not more than 30 mph at a deceleration of not more than 10 fpsps. If test instrument repair, replacement, or adjustment is necessary, make not more than 10 additional stops after such repair, replacement or adjustment.

**S7.3 Service brake system — first (preburnished) effectiveness test.**

**S7.3.1 Service brake system.** Make six stops from 30 mph and then six stops from 60 mph with an initial brake temperature between 130° F. and 150° F.

**S7.3.2 Partial service brake system.** For a motorcycle with two independently actuated service brake systems, repeat S7.3.1 using each service brake system individually.

**S7.4 Service brake system—burnish procedure.** Burnish the brakes by making 200 stops from 30 mph at 12 fpsps. The braking interval shall be either the distance necessary to reduce the initial brake temperature to between 130° F. and 150° F. or 1 mile, whichever occurs first. Accelerate at maximum rate to 30 mph immediately after each stop and maintain that speed until making the next stop. After burnishing adjust the brakes in accordance with the manufacturer's recommendation.

**S7.5 Service brake system—second effectiveness test.** Repeat S7.3.1. Then, make four stops from 80 mph and four stops from the multiple of 5 mph that is 4 mph to 8 mph less than the speed attainable in 1 mile if that speed is 95 mph or greater.

**S7.6 Service brake system—fade and recovery test.** [These requirements do not apply to a motor-driven cycle whose speed attainable in 1 mile is 30 mph or less. (39 F.R. 32914—September 12, 1974. Effective: 10/14/74)]

**S7.6.1 Baseline check stops.** Make three stops from 30 mph at 10 to 11 fpsps for each stop. Compute the average of the maximum brake pedal forces and the maximum brake lever forces required for the three stops.

**S7.6.2 Fade stops.** Make 10 stops from 60 mph at not less than 15 fpsps for each stop. The initial brake temperature before the first brake application shall be between 130° F. and 150° F. Initial brake temperatures before brake applications for subsequent stops shall be those occurring at the distance intervals. Attain the required deceleration as quickly as possible and maintain at least this rate for not less than three-fourths of the total stopping distance for each stop. The interval between the starts of service brake applications shall be 0.4 mile. Drive 1 mile at 30 mph after the last fade stop and immediately conduct the recovery test specified in S7.6.3.

**S7.6.3 Recovery test.** Make five stops from 30 mph at 10 to 11 fpsps for each stop. The braking interval shall not be more than 1 mile. Immediately after each stop accelerate at maximum rate to 30 mph and maintain that speed until making the next stop.

**S7.7 Service brake system—reburnish.** [Repeat S7.4 except make 35 burnish stops instead of 200 stops. Brakes may be adjusted after reburnish if no tools are used. These requirements do not apply to a motor-driven cycle whose speed attainable in 1 mile is 30 mph or less. (39 F.R. 32914—September 12, 1974. Effective: 10/14/74)]

**S7.8 Service brake system—final effectiveness test.** [These requirements do not apply to a motor-driven cycle whose speed attainable in 1

mile is 30 mph or less. (39 F.R. 32914—September 12, 1974. Effective: 10/14/74)】

**S7.8.1 Service brake system.** 【Repeat S7.5 including S7.3.1. (39 F.R. 43075—December 10, 1974. Effective: 12/10/75)】

**S7.8.2 Partial service brake system test.** Alter the service brake system on three-wheeled motorcycles to induce a complete loss of braking in any one subsystem. Determine the line pressure or pedal force necessary to cause the brake system failure indicator to operate. Make six stops from 30 mph and then six stops from 60 mph with an initial brake temperature between 130° F. and 150° F. Repeat for each subsystem. Determine that the brake failure indicator is operating when the master cylinder fluid level is less than the level specified in S5.1.3.1(a)(2), and that it complies with S5.1.3.1(c). Check for proper operation with each reservoir in turn at a low level. Restore the service brake system to normal at completion of this test.

**S7.9 Parking brake test.** Starting with an initial brake temperature of not more than 150° F., drive the motorcycle downhill on the 30 percent grade with the longitudinal axis of the motorcycle in the direction of the grade. Apply the service brakes with a force not exceeding 90 pounds to stop the motorcycle and place the transmission in neutral. Apply the parking brake by exerting a force not exceeding those specified in S5.6. Release the service brake and allow the motorcycle to remain at rest for 5 minutes. Repeat the test with the motorcycle parked in the reversed (uphill) position on the grade.

**S7.10 Service brake system—water recovery test.**

**S7.10.1 Baseline check stops.** Make three stops from 30 mph at 10 to 11 fpsps for each

stop. Compute the average of the maximum brake pedal forces and of the maximum brake lever forces required for the three stops.

**S7.10.2 Wet brake recovery stops.** 【Completely immerse the rear brake assembly of the motorcycle in water for two minutes with the brake fully released. Next completely immerse the front brake assembly of the motorcycle in water for two minutes with the brake fully released. Perform the entire wetting procedure in not more than seven minutes. Immediately after removal of the front brake from water, accelerate at a maximum rate to 30 m.p.h. without a brake application. Immediately upon reaching that speed make five stops, each from 30 m.p.h. at 10 to 11 fpsps for each stop. After each stop (except the last) accelerate the motorcycle immediately at a maximum rate to 30 m.p.h. and begin the next stop. (38 F.R. 14753—June 5, 1973. Effective: 1/1/74)】

**S7.11 Final inspection.** Upon completion of all the tests inspect the brake system in an assembled condition, for compliance with the brake lining inspection requirements. Disassemble all brakes and inspect:

(a) The entire brake system for detachment or fracture of any component.

(b) Brake linings for detachment from the shoe or pad.

(c) Wheel cylinder, master cylinder, and axle seals for fluid or lubricant leakage.

(d) Master cylinder for reservoir capacity and retention device.

(e) Master cylinder label for compliance with S5.1.2.2.

37 F.R. 5033  
March 9, 1972

## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 123

### Motorcycle Controls and Displays

(Docket No. 70-26; Notice 3)

This notice amends Part 571 of Title 49, Code of Federal Regulations, to add a new Motor Vehicle Safety Standard No. 123 (49 CFR § 571.123) that establishes requirements for motorcycle controls and displays. A notice of proposed rulemaking on this subject was published on November 6, 1970 (35 F.R. 17117).

The National Highway Traffic Safety Administration estimates that over 3,000 accidents may be avoided annually by specifying a uniform standard for motorcycle controls and displays. As this agency commented in the prior notice: "Controls and displays link the operator and the machine, and if there is confusion as to their location, interpretation, or operation, a dangerous situation may result. A cyclist, especially the novice and the cyclist who has changed from one make of machine to another, must not hesitate when confronted with an emergency." The purpose of the new standard is to minimize operator error in responding to the motoring environment, by standardizing certain motorcycle controls and displays.

The basic operational requirement of Standard No. 123 is that handlebar-mounted controls be operable throughout their full range without the operator removing his hand from the handgrip. Standard No. 123 requires all motorcycles to have a supplemental engine stop control, operable from the right handlebar, intended for use in emergency situations. Notice of this requirement was proposed in Notice 2 to Docket No. 69-20, *Accelerator Control Systems* (35 F.R. 15241). Standard No. 123 also requires that if any of ten other specified equipment items are provided on a motorcycle, the location and method of operation of the applicable control shall be standardized. These items are: manual clutch or integrated clutch and gear change,

foot-operated gear change, headlamp upper-lower beam control, horn, turn signal lamps, ignition, manual fuel shutoff control, twist-grip throttle, front wheel brake, and rear wheel brakes. Motorcycles that are designed and sold exclusively for use by law enforcement agencies are excluded from Standard No. 123, as the configuration of certain controls on such vehicles, necessary for law enforcement purposes, differs from that required by the new standard. Proposals applicable to the instrument illumination intensity control, the electric starter, and the kick starter have not been adopted as insufficient correlation with motor vehicle safety has been found for these items.

As noted below, some of the location and operational requirements that were proposed have not been adopted in the following instances. Otherwise, the location and operation of controls are required as proposed.

1. *Foot-operated gear change.* The likelihood of inadvertent engagement of reverse gear has been found to be so slight that a means to prohibit it has not been found necessary. Further, no requirement has been specified for location of neutral gear. Under Proposal A, neutral would have occurred lowest in the gear sequence. Proposal A was not adopted because of the likelihood of overshooting low gear when downshifting, thus contributing to a possible loss of control. In Proposal B, the transmission would be put into neutral by a rearward motion of the operator's heel on a control device separate from the shift lever. This method was not adopted since it appears to have no inherent safety advantages over any other means of finding neutral. The intent of Proposal B was to ensure that neutral can reliably be selected when desired without being selected inadvertently when not

desired. The conventional neutral light may serve as an aid to such shifting; however, any system which requires eye movements away from the road merely to shift gears cannot be considered to be an adjunct to safety.

The present standard does not impose specific requirements for ease of locating the gear position, or for protection against inadvertent shifting into neutral. However, the Administration considers these to be desirable objectives and will consider amending the standard if it appears necessary to do so.

2. *Headlamp control.* Because heavy gloves are needed for safe riding, only a simple "up for higher beam, down for lower beam" requirement has been adopted.

3. *Turn signal lamps.* Because turn signal lamps are not a required item of motorcycle equipment until January 1, 1973, and the industry is experimenting with various controls, Standard No. 123 specifies only that the turn signal lamp control be located on the handlebars.

4. *Ignition:* Because of the adoption of the requirement that motorcycles be equipped with a supplemental engine stop control on the right handlebar, the need to specify a location and method of operation for the ignition has diminished. Accordingly, the sole ignition control requirement is that the "off" position be counterclockwise from all other positions.

5. *Manual fuel shutoff control.* The requirements adopted do not apply to automatic fuel shutoff controls. No location for a manual control is specified. Based upon comments, revisions have been made in the direction of valve operation.

Substantial modifications have been made as well in the display proposals. Because of the limited range within which displays can be lo-

cated on a motorcycle, it has been determined that no specific location requirements are necessary. Illumination of the neutral position and the speedometer has been deemed essential; the proposal that a green lamp indicate neutral position has been adopted, and the speedometer must be illuminated whenever the headlamp is activated. Because turn signals and upper beam indicators are covered in Standard No. 108, they have been omitted from the display illumination requirements of Standard No. 123.

Proposals for control identification, stands, and passenger foot-rests have been adopted substantially as proposed. Since operating instructions are invariably provided with motorcycles, the NHTSA has not adopted the proposal covering them.

*Effective date:* September 1, 1974. Because of the leadtime necessary for preparation for production, it is found, for good cause shown, that an effective date later than one year after the issue date is in the public interest.

In consideration of the foregoing, Title 49, Code of Federal Regulations, is amended by adding § 571.123, Motor Vehicle Safety Standard No. 123, *Motorcycle Controls and Displays*, as set forth below.

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on April 4, 1972.

Douglas W. Toms  
Administrator

37 F.R. 7207  
April 12, 1972

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 123

### Motorcycle Controls and Displays

This notice responds to petitions for reconsideration of Motor Vehicle Safety Standard No. 123 (49 CFR § 571.123) and amends the standard in minor respects.

Motor Vehicle Safety Standard No. 123, establishing requirements for the location, operation, identification, and illumination of motorcycle controls and displays, effective September 1, 1974, was published on April 12, 1972 (37 F.R. 7207). Thereafter, pursuant to 49 CFR § 553.35, petitions for reconsideration of the rule were filed by Japan Automobile Manufacturers Association, Inc. ("JAMA"), Kawasaki Motors Corp. (Kawasaki), and Cushman Motors ("Cushman") through counsel. In response to these petitions the standard is being revised in minor respects. The Administrator has declined to grant requested relief from other requirements of the standard.

1. *Manual fuel shutoff valve.* Standard No. 123 requires that the manual fuel shutoff control point downward when in the "on" position, forward in the "off" position, and upward to supply fuel from a reserve source if one is provided.

JAMA has requested that the configuration found on most Japanese motorcycles be adopted: "off" with the control position to the left, "reserve" to the right, and "on" downward. JAMA's request was originally made in response to the notice proposing control positions for the shut-off valve, and was considered at that time. JAMA's petition is denied. The NHTSA has determined that the control should be standardized by requiring its operation along a longitudinal rather than a transverse axis. In this location there is a greater likelihood that in the event of a crash, the control will be carried by inertia to the off position, thereby shutting off the fuel.

JAMA also asked for an interpretation of the words "control pointing" asking if the words

mean the direction of a non-operational pointer indicating the off-position, or the direction of the control end operated by the fingers. "Control pointing" means the direction of the control end operated by the fingers. To eliminate this possible ambiguity, the word "pointing" is deleted from the entry in Table I.

2. *Headlamp control.* The NHTSA requires, in Standard No. 123, that the upper headlamp beam be activated with an upward motion of the beam control, and the lower beam by a downward motion. Kawasaki has asked that these positions be reversed. It reasons that when the left thumb is under the handlebar, the lower beam control can be more quickly activated with an upward movement of the thumb, rather than by raising the thumb above the switch and then depressing it. The Administration denies Kawasaki's request, as it is considered contrary to good human factors engineering. Control mechanisms which are used for increasing the output of a system are generally designed to be switched upward for higher intensity.

3. *Speedometer graduations.* Both JAMA and Kawasaki have petitioned for reconsideration of the requirement that major and minor graduations and numerals appear at the 10 and 5 mph intervals respectively, alleging that operator confusion could be caused by a clutter of numerals and graduations at 5 mph intervals. The NHTSA considers these petitions to have merit and is amending Standard No. 123, to require only minor graduations at the 5 mph intervals.

4. *Control identification.* JAMA has petitioned for an amendment of Table 3 to eliminate identification of some controls and to identify only control positions. The petition also requested abbreviation of the identification presently required. JAMA alleges difficulty in providing all the identification marks due to lack of

space around the handlebar. It argues that an individual operator will not mistake one equipment item for another on different cycles when all controls are uniformly located as specified by Standard No. 123.

The Administration denies JAMA's petition. Labeling control positions without identifying the control itself could confuse the novice motorcyclist and may contribute to traffic hazards. During the initial learning stage the cyclist will not be able to identify controls by their required location. Further, there are no common abbreviations with universal acceptance for the controls mentioned, *viz.*, choke, starter, horn, and neutral indicator.

JAMA also requested a clarification as to whether control identification must be indicated in capital letters. The answer is no: use of upper or lower case lettering is at the manufacturer's discretion. Kawasaki asked whether it is permissible to add information to the tachometer identification indicating that it registers thousands of revolutions per minute. The marking requirements of the standard are minimum requirements only, and the NHTSA has no objection to further identification of this nature for the tachometer.

5. *Three-wheeled motorcycles.* Cushman manufactures three-wheeled motorcycles. It alleged that many of the requirements of Standard No. 123 are incompatible with the configuration of its vehicle. It requested that Standard No. 123 be amended to exclude three-wheeled motorcycles that are designed to achieve a maximum speed no greater than 40 mph. Cushman raised a number of specific objections concerning control location and operation, identification, and displays. In view of the disposition of Cushman's petition it is not necessary to discuss the objections in detail.

Cushman's petition is denied for the following reasons. Petitioner manufactures two types of three-wheeled vehicles, identical except for steering configuration. One type employs handlebars, the other a steering wheel. Its sales literature indicates that most models manufactured with handlebars are intended for industrial applications on private property, and are not intended to be licensed as motor vehicles for use on the public roads. The remaining models manufactured with handlebars are intended for police use. Standard No. 123 does not apply to this type of vehicle. Cushman's models intended for street use are equipped with the steering wheel as standard equipment. The standard does not apply to motorcycles with steering wheels. A denial of Cushman's petition means only that, after September 1, 1974, three-wheeled motorcycles for street use may not be sold with the handlebar option.

6. *Miscellaneous.* A typographical error is corrected concerning the integrated clutch and gear change.

In consideration of the foregoing, 49 CFR § 571.123, Motor Vehicle Safety Standard No. 123, is revised . . . *Effective date:* September 1, 1974, the same effective date as the standard as previously issued (37 F.R. 7207).

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority at 49 CFR 1.51.

Issued on August 22, 1972.

Douglas W. Toms  
Administrator

37 F.R. 17474  
August 29, 1972

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 123

(Docket No. 74-16; Notice 2)

This notice amends 49 CFR 571.108, 571.122, and 571.123, Motor Vehicle Safety Standards Nos. 108, 122, and 123, to modify current requirements that apply to motor-driven cycles.

Interested persons have been afforded an opportunity to participate in the making of the amendment by a notice of proposed rulemaking published on April 12, 1974 (39 F.R. 13287) and due consideration has been given to all comments received in response to the notice, insofar as they relate to matters within its scope.

The prior notice responded to petitions by Cycles Peugeot, Ateliers de la Motobecane, and S.I.N.F.A.C., manufacturers, and Bermuda Bikes, Inc., and Robert F. Smith, retail dealers. The notice proposed that a motor-driven cycle whose speed attainable in 1 mile is 30 mph or less need not be equipped with turn signal lamps, and may be equipped with a stop lamp with one-half the photometric output otherwise required. Braking fade and recovery requirements also would not apply to these low-speed vehicles. Maximum stopping distances values for the various tests would be added for test speeds of 25, 20, and 15 mph. Finally, a braking control on the left handlebar would be a permissible alternative to the required right foot braking control.

The comments received addressed both areas of performance covered in the proposal, and areas where no standards currently exist, such as motors, transmissions, pedals, and a request for exemption from Standard No. 119, *Tires for Vehicles Other Than Passenger Cars*. As these latter comments cover matters beyond the scope of the proposal, this notice does not discuss them. The agency, however, has been formally petitioned for rulemaking covering transmissions and Standard No. 119, and will respond to the petitioners in the near future.

The decision by NHTSA not to establish a separate category of vehicle was objected to by

some commenters. In support of their request, they argued that the majority of motor-driven cycles have engines producing only 1.5 to 2 horsepower, and consequent low maximum speeds, reducing the need for forward lighting that is currently required of these vehicles. Petitioners submitted no data justifying their request. The NHTSA, however, intends to study the matter of forward lighting for low-powered two-wheeled vehicles through a research contract with the University of Michigan. When the contract is completed the agency will then decide whether further rulemaking is warranted.

The proposal distinguished motor-driven cycles on the basis of maximum speed attainable in 1 mile, rather than on horsepower, and the value selected, 30 mph, fell within the maximum (40 mph) and minimum (20 mph) suggested by commenters. The NHTSA has concluded therefore that the distinction should be adopted as proposed.

Some manufacturers requested restrictive controls on power plant output, apparently in fear that the engine of a vehicle with a top speed of 30 mph or less could be modified to exceed that speed, and therefore cause the vehicle to no longer comply with the Federal standards. This agency has not found that course of action to be practicable. The various ways to modify a vehicle after purchase cannot be anticipated or prevented at the manufacturer level. On the other hand, the great majority of consumers use their vehicles in the form in which they were purchased. The motor-driven cycle category itself contains a limitation of 5 horsepower, which will be applicable to the special lighting modifications. In the NHTSA's judgment, modifications by consumers and the consequent equipment requirements should continue to be regulated at the State level.

The fact that the agency took no action to propose a reduction in existing headlamp requirements for motor-driven cycles was criticized by several manufacturers as unduly restrictive because of the low speed and power output of their vehicles. No justification has been shown for such a change. Motor-driven cycles therefore must have sufficient generating and/or battery capacity to meet the headlamp requirements.

There was no substantive objection to the actual proposals for omission of turn signals, reduced stop lamp photometrics, relief from brake fade requirements, inclusion of maximum allowable stopping distances for low speeds, and rear brake control placement. Accordingly, the standards are being amended in the manner proposed.

Standard No. 122 is also being amended to delete the final effectiveness test (S5.5) for those motor-driven cycles excused from the fade and recovery requirements. The purpose of the final effectiveness test is to check the stopping ability of the vehicle after the fade and recovery tests. Since this requirement has been eliminated for motor-driven cycles of low top-speed, the final effectiveness test is redundant, and an unneces-

sary duplication of the second effectiveness test. No safety purpose is served by its retention. Language is also added to the fade and recovery and final effectiveness test procedures (S7.6, S7.7, and S7.8), making it clear that they do not apply to motor-driven cycles whose speed attainable in 1 mile is 30 mph or less.

In consideration of the foregoing, 49 CFR Part 571 is amended . . .

Effective date: October 14, 1974. As the amendments allow new options for compliance, relieve restrictions, and impose no additional burdens on regulated persons, it is found for good cause shown that an effective date earlier than 180 days after issuance of the amendments is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on September 6, 1974.

James B. Gregory  
Administrator

**39 F.R. 32914**  
**September 12, 1974**

## MOTOR VEHICLE SAFETY STANDARD NO. 123

### Motorcycle Controls and Displays

(Docket No. 70-26; Notice 3)

**51. Scope.** This standard specifies requirements for the location, operation, identification, and illumination of motorcycle controls and displays, and requirements for motorcycle stands and footrests.

**52. Purpose.** The purpose of this standard is to minimize accidents caused by operator error in responding to the motoring environment, by standardizing certain motorcycle controls and displays.

**53. Application.** This standard applies to motorcycles equipped with handlebars, except for motorcycles that are designed, and sold exclusively, for use by law enforcement agencies.

**54. Definitions.** "Clockwise" and "counterclockwise" mean opposing directions of rotation around the following axes, as applicable:

(a) The operational axis of the ignition control, viewed from in front of the ignition lock opening;

(b) The axis of the right handlebar on which the twist-grip throttle is located, viewed from the end of that handlebar;

(c) The axis perpendicular to the center of the speedometer, viewed from the operator's normal eye position.

#### 55. Requirements.

**55.1** Each motorcycle shall be equipped with a supplemental engine stop control, located and operable as specified in Table I.

**55.2** Each motorcycle to which this standard applies shall meet the following requirements:

**55.2.1 Control location and operation.** If any item of equipment listed in Table 1, Column 1, is provided, the control for such item shall be located as specified in Column 2, and operable

as specified in Column 3. Each control located on a right handlebar shall be operable by the operator's right hand throughout its full range without removal of the operator's right hand from the throttle. Each control located on a left handlebar shall be operable by the operator's left hand throughout its full range without removal of the operator's left hand from the handgrip. If a motorcycle with an automatic clutch is equipped with a supplemental rear brake control, the control shall be located on the left handlebar. If a motorcycle is equipped with self-proportioning or anti-lock braking devices utilizing a single control for front and rear brakes, the control shall be located and operable in the same manner as a rear brake control.

**55.2.2 Display illumination and operation.** If an item of equipment listed in Table 2, Column 1, is provided, the display for such item shall be visible to a seated operator under daylight conditions, shall illuminate as specified in Column 2, and shall operate as specified in Column 3.

**55.2.3 Control and display identification.** If an item of equipment listed in Table 3, Column 1, is provided, the control for such item shall be identified by the word or words shown in Column 2 and any corresponding word in Column 3, placed on or adjacent to the control.

Control positions shall be identified as specified in Column 3, to signify the function performed at that setting. The abbreviations used in Columns 2 and 3 are minimum requirements and appropriate words may be spelled in full. Identification shall appear to the operator in an upright position.

Functional identification need not be provided for equipment items with no entry in Column 3.

**S5.2.4 Stands.** A stand shall fold rearward and upward if it contacts the ground when the motorcycle is moving forward.

**S5.2.5 Footrests.** Footrests shall be provided for each designated seating position. Each footrest for a passenger other than an operator shall fold rearward and upward when not in use.

TABLE 1.—Motorcycle Control Location and Operation Requirements

Equipment Control	Location	Operation
<i>Column 1</i>	<i>Column 2</i>	<i>Column 3</i>
1. Manual clutch or integrated clutch and gear change 2. Foot operated gear change	Left handlebar  Left foot control	Squeeze to disengage clutch.  An upward motion of the operator's toe shift transmission toward lower numerical gear ratios (commonly referred to as "higher gears"), and a downward motion toward higher numerical gear ratios (commonly referred to as "lower gears"). If three or more gears are provided it shall not be possible to shift from the highest gear directly to the lowest gear, or vice versa.
3. Headlamp upper-lower beam control	Left handlebar	Up for upper beam, down for lower beam. If combined with the headlight on-off switch, means shall be provided to prevent inadvertent actuation of the "off" function.
4. Horn 5. Turn signal lamps 6. Ignition 7. Manual fuel shutoff control	Left handlebar Handlebars	Push to activate.  "Off"—counterclockwise from other positions. "Off"-control forward, "On"-control downward, "Reserve" (if provided)-control upward.
8. Twist-grip throttle	Right handlebar	Self-closing to idle in a clockwise direction after release of hand.
9. Supplemental engine stop 10. Front wheel brake 11. Rear wheel brakes	Right handlebar Right handlebar Right foot control <sup>1</sup> Left handlebar permissible for motor-driven cycles.	Squeeze to engage. Depress to engage.

<sup>1</sup> See S5.2.1 for requirements for vehicles with a single control for front and rear brakes, and with a supplemental rear brake control.

【(39 F.R. 32914—September 12, 1974. Effective: 10/14/74)】

TABLE 2.—Motorcycle Display Illumination and Operation Requirements

Display	Illumination	Operation
<i>Column 1</i>	<i>Column 2</i>	<i>Column 3</i>
1. Speedometer	Yes	The display is illuminated whenever the headlamp is activated.
2. Neutral indication	Green display lamp	The display lamp illuminates when the gear selector is in neutral position.

TABLE 3.—Motorcycle Control and Display Identification Requirements

Equipment	Control and Display Identification	Identification at Appropriate Position of Control or Display
<i>Column 1</i>	<i>Column 2</i>	<i>Column 3</i>
1. Ignition 2. Supplemental engine stop 3. Manual choke 4. Electric starter 5. Headlamp upper-lower beam control 6. Horn 7. Turn signal 8. Speedometer	Ignition Engine stop Choke  Lights  Horn Turn M.P.H.	Off Off, run  Start <sup>1</sup> Hi, Lo  L, R M.P.H. increase in a clockwise direction. Major graduations and numerals appear at 10 mph intervals, minor graduations at the 5 mph intervals. (37 F.R. 17474—August 29, 1972. Effective: 9/1/74)
9. Neutral indicator 10. Upper beam indicator 11. Tachometer 12. Fuel tank shutoff valve	Neutral High beam R.P.M. Fuel	Off, on, res.

<sup>1</sup> Required only if electric starter is separate from ignition switch.

**37 F.R. 7207**  
**April 12, 1972**



## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 124

### Accelerator Control Systems

(Docket No. 69-20; Notice 3)

The purpose of this notice is to establish a new motor vehicle safety standard that specifies requirements for accelerator control systems of passenger cars, multi-purpose passenger vehicles, trucks and buses.

A notice of proposed rulemaking on this subject was published September 30, 1970 (35 F.R. 15241). The majority of comments received supported the proposal. There were some objections and questions, which have been considered in formulating the final rule.

In the previous notice, the Administrator indicated the importance of this standard in reducing the number of accidents caused by runaway engines. Since 1966, sixty recall campaigns totalling over 2.9 million vehicles have involved this problem. Three percent of all complaints in the Administration's files have reported malfunctioning accelerator or carburetor systems. Because the ability of a driver to control his vehicle is directly related to the proper functioning of the accelerator control system, it is essential that this system perform as expected, especially when the driver removes the actuating force. Therefore, the standard sets requirements to ensure the reliability of accelerator control systems over a wide range of driving conditions. Each system must include two independent sources of energy (such as springs) which shall return the throttle to idle upon the removal of the actuating force. In the case of breakage or disconnection in the accelerator system, the throttle shall return to idle either at the time of breakage or at the removal of the actuating force.

The latter requirement differs from the NPRM, which mandated a return to idle only when the actuating force was removed. Industry com-

ments raised valid objections to this requirement. In some cases, if a breakage occurred and the system had to keep operating until the driver took his foot off the pedal, a complicated system of sensors would have to be built into the throttle which would activate the redundant energy sources precisely at the time of actual removal. Such a device would be too expensive for its possible safety benefit, since the incidence of accidents from engine loss of power are minimal when compared with runaway overspeed statistics. Manufacturers, therefore, have been given the option to use either return-to-idle mode.

Although many comments suggested modification of the temperature range, the ambient temperature levels in the NPRM are retained. A review of meteorological data indicates that these figures conform to possible driving conditions in various areas of the United States.

There are four other proposed requirements in the NPRM that are not included in the final rule. These are the 300-pound force requirement, the coverage of automatic speed control systems, the freedom-of-movement requirement, and the coverage of motorcycles.

Several commenters raised objections to the 300-pound overforce, and some asked for a lesser force than 300 pounds. It was found on review that the safety benefits of an overforce test has not been demonstrated sufficiently and the requirement has been dropped from the rule.

The rule does not contain requirements for automatic speed control devices. It was found that although nine recall campaigns involving 61,176 vehicles have concerned these devices, no relationship to accelerator overspeed accidents could be established from automatic speed controls. Of the 540 multi-disciplinary accident

reports that were studied in formulating the final rule, none mentioned the automatic system. The requirements of the NPRM reiterated SAE recommendations that are already used by manufacturers.

The "freedom-of-movement" paragraph raised the objections of subjectivity and difficulty of implementation. Enforcement through compliance testing would lead to controversy over the imprecise meaning of "necessary chafing." It appears that to comply with the final rule, the accelerator system will have to be free of excessive and unsafe rubbing and friction.

The decision to eliminate motorcycles from the applicability of this standard is based on the fact that motorcycles are so different in design from the other vehicles covered that definitions and failure modes are dissimilar. Also, a safety standard specifically tailored for motorcycle controls (Docket 70-26) will be issued this year.

This issue of the Federal Register contains a Notice of Proposed Rule-making to amend Standard No. 124 (37 F.R. 7108). The proposal is that the two independent sources of energy would return the throttle idle within one half second after the removal of the actuating force or a breakage or disconnection in the accelerator control system.

This standard is directed at the hazard caused by a failure in the accelerator control system.

Those engine overspeed incidents caused by other failure modes such as broken or worn engine mounts are not addressed by this rulemaking action. The NHTSA is presently developing performance requirements for safety under other failure modes.

In consideration of the foregoing, Part 571 of Title 49, Code of Federal Regulations, is amended by adding a new § 571.124, Motor Vehicle Safety Standard No. 124, as set forth below.

*Effective Date:* September 1, 1973.

Because of the development work and preparation for production that this standard will require, it is found that an effective date later than 1 year from the date of issuance is in the public interest. Accordingly, the standard is effective September 1, 1973.

This rule is issued under the authority of Sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1407) and the delegation of authority at 49 CFR 1.51.

Issued on March 31, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 7097**  
**April 8, 1972**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 124****Accelerator Control Systems**

(Docket No. 69-20; Notice 5)

The purpose of this notice is to respond to petitions for reconsideration of Motor Vehicle Safety Standard No. 124 (49 C.F.R. 571.124), and to amend the standard to specify time requirements for the return of a vehicle's throttle to the idle position.

On April 8, 1972 (37 F.R. 7097), Motor Vehicle Safety Standard No. 124 was published, establishing requirements for accelerator control systems, effective September 1, 1973. Simultaneously, a notice was published (37 F.R. 7108) proposing that when the driver removes the actuating force from the accelerator control or in the event of a breakage or disconnection in the accelerator control system, the return to idle position shall occur within one-half second.

I. Pursuant to 49 C.F.R. 553.35, petitions for reconsideration of the rule were filed by Alfa Romeo, American Automobile Association (AAA), American Motors Corporation, Chrysler Corporation, Diamond Reo Trucks, Incorporated, Ford Motor Company, General Motors Corporation (GM), International Harvester Company, Japan Automobile Manufacturers Association (JAMA), Jeep Corporation, Jesse R. Hollins, Mack Trucks, Incorporated, MacMillan Engineering Lab, Motor Vehicle Manufacturers Association of the United States, Incorporated, (MVMA) (formerly Automobile Manufacturers Association, Incorporated), and Rolls-Royce Motors Limited.

Favorable consideration has been granted to some of these petitions, and accordingly, the standard is being amended in some minor respects. The Administrator has declined to grant requested relief from other requirements of the standard.

GM and Ford requested that vehicles over 10,000 pounds GVWR be exempted from the standard, while Mack and Diamond Reo requested an exemption for vehicles of 26,000 and 25,000 pounds or more GVWR, respectively. Petitioners argued that since these vehicles are driven by professionally trained drivers, are equipped with engine governors, have a horsepower to weight ratio that does not mandate a fail-safe requirement, and have not been the subject of a defect notification campaign, there is no need for the rule's applicability.

The NHTSA denies petitioners' request. Available information shows that accidents resulting from throttle failure do not occur only among the less experienced drivers, nor are they diminished by the presence of engine governors or by changes in the horsepower to weight ratio. Further, these vehicles have been the subject of defect notification campaigns, and accident reports submitted to the Bureau of Motor Carrier Safety disclose that an average of two accidents occur per month in which the cause is attributed to "overspeed incidents", indicating the type of failure the standard is designed to eliminate.

Additionally, GM stated that the standard's test requirements are not justified by the possible additional safety benefit that may accrue. They argued that the only method by which it could assure compliance is by immersion of the entire vehicle in a low temperature cell. GM stated that sufficient facilities to conduct such tests on all their vehicles are not available, and even if they were, the test burden is impracticable because of the complications of determining where over the length of the vehicle the ambient temperature measurements should be taken.

The NHTSA does not view Standard No. 124 as a qualification procedure by which a manufacturer can assure himself or his customers that the vehicle now has a fail-safe system. The rule is intended to provide a minimum performance requirement, and does not mandate that assurances of being in compliance must be made by immersing the total vehicle in a low temperature cell. Assurances of compliance may come from other procedures.

Several petitioners provided data showing that it is a common practice in the automobile industry to include the "throttle lever" or "actuating lever" as part of the carburetor. They ask that these devices be interpreted to be part of the fuel metering device so as to afford them greater freedom of design.

The NHTSA agrees with this interpretation. The "throttle lever" or "actuating lever" as described by the petitioners is a component of the fuel metering device.

Additionally, several petitioners requested that the definition of "idle position" be amended to take into consideration delay units or "dash pots" which are frequently used on idle settings to slow the return of the throttle during its last few degrees of rotation to prevent stalling and excessive exhaust emissions. In essence, petitioners request that the return to idle time be measured to the point at which the throttle first comes in contact with the delay unit or "dash pot." This request is in accordance with the intended meaning of the standard. For clarification, the NHTSA is amending the definition of "idle position" to be the specific point of throttle closure at which the throttle first comes in contact with an engine idle speed control device.

Mack and Alfa Romeo petitioned that "hand throttles" and throttle positioners be specifically excluded from the definition of "idle position". Petitioners stated that in the event such a device is used a return to the preset throttle position occurs upon release of the driver-operated accelerator control system. This request is granted. If a driver chooses to raise the lowest engine speed threshold by the use of a throttle positioning device, the throttle should return to that new position within the same time requirements specified in section S5.3. Accordingly, the NHTSA

is amending the definition of "idle position" to provide for the use of throttle positioners.

JAMA requested that the engine warm-up provisions for cold temperatures be clarified, so that it would be possible to conduct tests "after warming up the engine according to the manufacturer's recommendation." Standard No. 124 is silent as to engine warm-up, and states only "when the engine is running" as a condition for the test. Although the advantages of following the manufacturer's warm-up procedures are recognized, it is felt that in most instances the driving public does not adhere to those recommendations. Therefore, to afford the driving public as broad a coverage of the rule as is possible, JAMA's petition is denied.

AAA and Chrysler petitioned for an amendment of the ambient temperature range. AAA urged that since colder temperatures are commonplace in Alaska and that hotter temperatures are used by vehicle manufacturers to test fuel system control devices, a more severe temperature range should be established. Chrysler stated that the minus 40 degree figure exceeds automotive practice by 30 degrees and asked that a performance level of minus 10 degrees be established.

In determining the temperature limits to be used, the NHTSA attempted to provide motor vehicle safety without establishing impracticable design goals. Weather data discloses that although temperatures of minus 40 degrees Fahrenheit are encountered in many parts of the United States, colder temperatures are unusual. For this reason, minus 40 degrees Fahrenheit was determined to be the lowest temperature consistent with the needs of motor vehicle safety. Conversely, vehicle operations in temperatures exceeding 125 degrees Fahrenheit are also unusual. Accordingly, it was determined that temperature limits of minus 40 degrees to plus 125 degrees Fahrenheit will allow for most climatic conditions encountered in the United States. The petitions are therefore denied.

Several petitioners asked for an interpretation of the phrase "The system shall include at least two sources of energy" in section S5.1 and whether it includes energy sources attached to the fuel metering service. Petitioners stated

that a strict interpretation would cause excessive design restrictions. If a return spring attached to the fuel metering device is capable of returning the throttle to its idle position after the failure of other energy sources, it meets the intent of the standard and should not be disallowed. Accordingly, paragraph S5.1 is amended by replacing the phrase "The system shall include at least two sources of energy" with "There shall be at least two sources of energy".

JAMA asked whether, if a system includes three or more springs, each spring must be independently capable of returning the throttle to the idle position. They argued that a system could still remain adequately fail-safe as long as the other springs operating together can meet the requirements. The intent of paragraph S5.1 is to eliminate the driver's dependence on a single accelerator return spring. The NHTSA concurs with JAMA's comments and is amending paragraph S5.1 to make it clear that independent capability of return springs is not required if remaining energy sources are collectively capable of returning the throttle to the idle position.

The standard as issued required that the throttle return to the idle position "whenever any element of the accelerator control system becomes disconnected or broken." Several petitioners seek an interpretation of this wording. GM suggested that a disconnection or breakage within the driver-operated accelerator control system was the only failure mode addressed by the standard. Ford asked whether the requirement was intended to cover failures caused by bending, twisting, jamming, or introduction of foreign matter. The NHTSA's intent is to assure safety under conditions of a single failure due only to a severing or disconnection in the accelerator control system. To clarify this interpretation, the NHTSA is changing the word "breakage" to "severance" in paragraph S1, and the word "broken" to "severed" in the first sentence of paragraph S5.2. Further, the phrase "whenever any element of the accelerator control system" is changed to "whenever any one component of the accelerator control system" for purposes of clarification.

Ford and JAMA petitioned that the effective date of the standard be delayed one year. Peti-

tioners stated that additional time was necessary to allow for the creation and confirmation of design changes and to resolve any conflicts with emission control requirements.

The NHTSA considers the complexity of the requirements of standard No. 124 to be minimal and has granted relief on several issues effecting design time, and therefore sees no justification for delaying the effective date of the standard. The petitions are denied.

II. On April 8, 1972 (37 F.R. 7108) a notice was published proposing that when the driver removes the actuating force from the accelerator control or in the event of a breakage or disconnection in the accelerator control system, the return to idle position shall occur within one-half second. Available information indicates that in most instances the time for driver reaction from the accelerator control pedal to the brake is approximately one-half second, and this time was chosen for the proposal. In response to the notice, many commentators objected to the one-half second proposal and stated that it did not adequately take into consideration the viscous nature of lubricants in extremely cold temperatures and the impracticability of this time requirement for the very large systems in heavy trucks and buses. The NHTSA recognizes the validity of these objections, and allowances have accordingly been made for extreme low temperature. An idle time of 3 seconds is established for any vehicle tested or conditioned in ambient air of 0 degrees Fahrenheit or colder.

Large systems, similar to those used on rear-engine buses, have sufficient mass and friction to preclude the possibility of compliance with the one-half second proposal, unless very high spring forces, which would require large changes in pedal forces, are used. Several commentators stated that tests for conformity with the proposed requirements show that compliance would be possible if the maximum time were extended to 2 seconds. The NHTSA finds these comments to have merit, and 2 seconds is established as the maximum return time for vehicles with a GVWR over 10,000 pounds.

Many comments pertaining to passenger car systems stated that the one-half second proposed is too severe a requirement. One commentor

stated that extra time will be required if one of the return energy sources fails. It was pointed out that precedent for an extra allowance can be found in the dual braking system requirement, which allows added distance for stopping when half the system has failed. The accelerator standard, however, does not deal with a mechanism with the same redundancy as the braking system and it is felt that the maximum time selected should allow for the possibility of one energy source failing.

There are a large number of models and engine sizes in the passenger car industry, and a large number of variety of accelerator control systems are designed and built each year. One commentator suggested that “. . . a one second time limit would considerably increase design options . . .” and “presently accepted pedal feel can be retained. . .” Accordingly, one second has been decided upon as having the qualities of providing a reasonable maximum time for compliance testing of vehicles of 10,000 pounds or less GVWR at temperatures above 0 degrees Fahrenheit.

In response to questions raised by several petitioners, “ambient temperature is defined as the surrounding air temperature, at a distance such that it is not significantly affected by heat from the vehicle under test. The definition contrasts the ambient temperature, intended to simulate a general outdoor temperature, from temperatures under the hood or otherwise in close proximity to the vehicle.

In consideration of the foregoing, 49 CFR 571.124, Motor Vehicle Safety Standard No. 124, is revised to read as set forth below.

Effective date: September 1, 1973.

This rule is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1407) and the delegation of authority at 49 CFR 1.51.

Issued on September 20, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 20033**  
**September 23, 1972**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 124****Accelerator Control Systems****(Docket No. 69-20; Notice 6)**

The purpose of this notice is to respond to petitions for rulemaking to amend and petitions for reconsideration of Motor Vehicle Safety Standard No. 124 (49 CFR 571.124).

On September 23, 1972 (37 F.R. 20033), Motor Vehicle Safety Standard No. 124 was published specifying time requirements for the return of a vehicle's throttle to the idle position. Pursuant to 49 CFR 553.35, petitions for reconsideration were filed by Japan Automobile Manufacturers Association, Inc. (JAMA) and Volkswagen of America, Inc. Additionally, pursuant to 49 CFR 553.31, a petition for rulemaking to amend the standard was filed by the Ford Motor Company.

Favorable consideration has been granted to some of the requests and accordingly, the standard is being amended in some minor respects. The Administrator has declined to grant requested relief from other requirements of the standard.

Volkswagen requested that the test requirements for cold temperatures be clarified, in order to determine whether it is possible to use supplementary starting devices and to "pump" the accelerator control pedal during and after the presoak and prior to the test. The advantages of using supplementary devices and warmup procedures are recognized, but in many instances, the driving public either does not adhere to the manufacturer's recommended warmup procedures or uses other procedures. The intent of the standard is to afford the driving public as broad a coverage of the rule as is possible, by simulating as closely as possible actual conditions. Accordingly, for purposes of testing compliance the engine may be started by the use of any supplementary starting devices and procedures except those which would induce the vehicle into motion by the application of an external force.

Volkswagen also asked the NHTSA to define the speed at which the accelerator pedal is "to be released" to mark the beginning of the test determining the return of the throttle to idle position. The agency's intent is to provide protection in the variety of situations that may be encountered on the road. The vehicle, therefore, must be capable of meeting the requirements no matter how rapidly or slowly the driver's foot is lifted from the pedal. The actuating force actually is not "removed" from the pedal until the foot is no longer in contact with it, so the measured time period for throttle return does not begin until the instant when the foot leaves the pedal.

Further, Volkswagen asked the NHTSA to define a "running engine." Volkswagen stated that during cold testing an engine could start, run for approximately 6 seconds, and then stall. Volkswagen theorized that it would be possible to have an accelerator system fail the test requirements during this 6-second interval, although the engine would be incapable of causing a safety problem. The phrase "engine running" defines a condition without which throttle return to idle position has no significance. The intent of the standard is to prevent any safety problems caused by faulty throttle return over a broad range of operating circumstances and temperature conditions. The condition of a running engine, regardless of torque produced, is a clearly definable point at which a safety problem could begin to occur. Therefore, the vehicle must be capable of meeting the requirements whenever the engine is rotating without the application of any external force.

JAMA requested that the time requirements for maximum return to idle position when tested in temperatures between 0 and minus 40 degrees

Fahrenheit be applied "only when there is no failure of the source of energy and no disconnection or severance of components." JAMA stated that in order for a system to meet the time requirements of the rule during cold testing, the "required pedal effort would be increased to an extent that would not be acceptable to the ordinary driver." In its earlier comments to Notice 3, (37 F.R. 7097), JAMA stated that if each energy source was independently required to return the throttle to idle within the specified time requirements, increased pedal forces would be necessary. In response to this comment and to allow a manufacturer design freedom, the standard was amended by Notice 5, (37 F.R. 20033), to specify that independent capability of energy sources to return the throttle to idle position was not required. The amendment also gave an additional time allowance for return to idle position for vehicles tested or conditioned in cold temperatures. Based on these factors and on the comments received from other manufacturers, this agency's position is that the standard provides enough latitude for a manufacturer to feasibly meet the pedal force requirements and the time requirements for return to idle, even if there is a failure of one source of energy or a severance or disconnection occurs. The petition is therefore denied.

Ford pointed out that under the requirements section, S5.1 states that, "There shall be at least two sources of energy" and that this seemed at variance with the intent expressed in the preamble to Notice 5 that energy sources do not have to be contained in the accelerator control system. To further clarify the intent expressed in Notice 5, the phrase in S.5 "The vehicle shall be equipped

with a driver-operated accelerator control system that meets the following requirements" is changed to "The vehicle shall meet the following requirements . . . ."

Ford also asked for a clarification of the word "failure" in S5.1. Ford stated that the word was ambiguous in that it would allow for abnormal operating conditions outside the scope of the standard's intent to assure safety under conditions of a single failure due to a severance or disconnection in the system. To clarify the standard's intent, the phrase in S5.1 which states that, "In the event of failure of one source of energy the remaining source or sources shall be capable of returning the throttle" is changed to "In the event of failure of one source of energy by a single severance or disconnection, the throttle shall return . . . ."

Further, in the first sentence of S5.2 the word "becomes" is changed to "is" and the phrase "at a single point" is added to the end of the sentence to clarify this meaning.

In consideration of the foregoing, 49 CFR 571.124, Motor Vehicle Safety Standard No. 124, is revised to read as set forth below.

Effective date: September 1, 1973.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on January 24, 1973.

Douglas W. Toms  
Administrator

**38 F.R. 2980**  
**January 31, 1973**

## MOTOR VEHICLE SAFETY STANDARD NO. 124

## ACCELERATOR CONTROL SYSTEMS

(Docket No. 69-20; Notice 3)

**51. Scope.** This standard establishes requirements for the return of a vehicle's throttle to the idle position when the driver removes the actuating force from the accelerator control, or in the event of a severance or disconnection in the accelerator control system.

**52. Purpose.** The purpose of this standard is to reduce deaths and injuries resulting from engine overspeed caused by malfunctions in the accelerator control system.

**53. Application.** This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses.

**54. Definitions.**

**54.1** "Driver-operated accelerator control system" means all vehicle components, except the fuel metering device, that regulate engine speed in direct response to movement of the driver-operated control and that return the throttle to the idle position upon release of the actuating force.

"Fuel metering device" means the carburetor, or in the case of certain engines, the fuel injector, fuel distributor, or fuel injection pump.

"Throttle" means the component of the fuel metering device that connects to the driver-operated accelerator control system and that by input from the driver-operated accelerator control system controls the engine speed.

["Idle position" means the position of the throttle at which it first comes in contact with an engine idle speed control appropriate for existing conditions according to the manufacturers' recommendations. These conditions include, but are not limited to, engine speed adjustments for cold engine, air conditioning,

and emission control, and the use of throttle setting devices. (37 F.R. 20033—September 23, 1972. Effective: 9/1/73)]

["Ambient temperature" means the surrounding air temperature, at a distance such that it is not significantly affected by heat from the vehicle under test. (37 F.R. 20033—September 23, 1972. Effective: 9/1/73)]

**54.2** In the case of vehicles powered by electric motors, the word "throttle" and "idle" refer to the motor speed controller and motor shutdown, respectively.

**55. Requirements.** [The vehicle shall meet the following requirements when the engine is running under any load condition, and at any ambient temperature between minus 40° Fahrenheit and plus 125° Fahrenheit after 12 hours of conditioning at any temperature within that range. (38 F.R. 2980—January 31, 1973. Effective: 9/1/73)]

**55.1** [There shall be at least two sources of energy capable of returning the throttle to the idle position within the time limit specified by S5.3 from any accelerator position or speed whenever the driver removes the opposing actuating force. In the event of failure of one source of energy by a single severance or disconnection, the throttle shall return to the idle position within the time limits specified by S5.3, from any accelerator position or speed whenever the driver removes the opposing actuating force. (38 F.R. 2980—January 31, 1973. Effective: 9/1/73)]

**55.2** [The throttle shall return to the idle position from any accelerator position or any speed of which the engine is capable whenever any one component of the accelerator control system is disconnected or severed at a single point. The

**Effective: September 1, 1973**

return to idle shall occur within the time limit specified by S5.3, measured either from the time of severance or disconnection or from the first removal of the opposing actuating force by the driver. (38 F.R. 2980—January 31, 1973. Effective: 9/1/73)】

【S5.3 Except as provided below, maximum time to return to idle position shall be 1 second for vehicles of 10,000 pounds or less GVWR, and

2 seconds for vehicles of more than 10,000 pounds GVWR. Maximum time to return to idle position shall be 3 seconds for any vehicle that is exposed to ambient air at 0 to minus 40 degrees Fahrenheit during the test or for any portion of the 12-hour conditioning period. (37 F.R. 20033—September 23, 1972. Effective: 9/1/73)】

**37 F.R. 7097  
April 8, 1972**

## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 125

### Warning Devices

The purpose of this amendment to Part 571 of Title 49, Code of Federal Regulations, is to add a new Motor Vehicle Safety Standard No. 125 (49 CFR § 571.125) that would establish shape, size, and performance requirements for warning devices that do not have self-contained energy sources. The devices are carried in motor vehicles and are erected to alert approaching motorists to the presence of a disabled vehicle.

A notice of proposed rulemaking on this subject was published on November 11, 1970 (36 F.R. 17350). The comments received in response to the notice have been considered in this issuance of a final rule.

As noted in the proposed rule, the standard will supplement the vehicular hazard warning signal lamps required by F.M.V.S.S. No. 108, *Lamps, Reflective Devices, and Associated Equipment*, in minimizing the likelihood of rear end collisions between oncoming traffic and disabled vehicles.

The standard is issued as an equipment standard and establishes requirements only for warning devices which do not have self-contained energy sources. Because provision of warning devices in new vehicles is optional, the instructions regarding the number of devices to be used are recommendations, rather than requirements, and the storage location requirement is deleted.

The standard requires that the device be bidirectional, lowers the minimum length of the triangle legs, and increases the permissible deviation from a vertical plane for the triangle when the device is placed on the road. It reduces the required minimum candlepower of the red reflective material and raises the luminance requirement for the orange fluorescent material. It also adds definitions of "reflex reflective," deletes one of the two definitions of the colors "red" and "orange," and deletes one of the two reflectivity

requirements. With respect to the conditioning requirements, the standard lowers the high temperature requirement.

Several of the comments submitted by foreign motor vehicle manufacturers stated that the warning device should conform to the recommendations of international advisory groups. The Economic Commission of Europe (E.C.E.), a United Nations-sponsored council of which twenty-six nations, including the United States, are members, is in the process of developing specifications for warning triangles to be ratified by national governments. The NHTSA has adopted most of the proposed E.C.E. requirements with the exception of the minimum candlepower requirement for wide angle positioning of the device. The NHTSA has determined that a lower minimum candlepower than that required by the E.C.E. provides adequate protection and is a more realistic reflection of the state of the art.

Comments from the domestic automobile industry objecting to mandatory provision of warning devices stated that available information does not justify the additional cost of supplying them in new vehicles. The NHTSA has concluded that it is necessary to collect further data regarding effectiveness of warning devices and frequency of use by consumers so that more accurate cost-benefit analyses may be made. For these reasons, the provision of warning devices has been made optional by issuing an equipment standard.

Numerous manufacturers of fuses submitted comments which described the merits of fuses and concluded that the proposed rule would prohibit the use of fuses. Neither the rule as issued nor the proposed rule applies to devices which have a self-contained energy source, such as fuses, flare pots, and electric lanterns. Thus

these devices may continue to be used as an alternative or a supplement to the device described in the standard.

Numerous comments from private citizens and State officials expressed concern that the required triangular shape of the warning device would prohibit the triangular Slow Moving Vehicle emblem currently used on many motor vehicles. Other comments supported the use of the triangular device because the triangular shapes would be used for similar purposes, to alert oncoming traffic that a reduction of speed is necessary due to a vehicle ahead. The Administration supports the dual use of the triangular symbol and it is intended that the warning device and the Slow Moving Vehicle emblem be complementary. As discussed in the notice of proposed rulemaking, State laws regarding slow moving vehicle emblems would be preempted by the standard only to the extent that they forbid the use of the triangular warning device intended by the standard.

Many comments recommended that the warning device be bi-directional in order to eliminate the possibility of placing the warning device with the non-reflective side facing oncoming traffic. It was pointed out that the increased cost of a bi-directional device over a unidirectional device would be minimal relative to the safety benefits provided. The NHTSA agrees, and accordingly the standard as issued requires the device to be bi-directional.

Some commenters felt that the motorist would subject himself to an additional safety hazard in placing the device approximately 100 feet behind the vehicle. Some suggested that the device be placed either on top of the vehicle or be capable of attaching to a window frame. While it is of course true that walking in a roadway can be hazardous, in the judgment of the NHTSA this risk is outweighed by the safety benefits of positioning the device at a distance behind the vehicle. Such positioning provides a greater distance over which oncoming traffic can recognize and respond to the warning and thus affords greater protection to the disabled vehicle.

Figures 3 through 9 indicating recommended positioning of warning devices have been consolidated into a single diagram indicating the suggested placement of the devices.

The permissible deviation from a vertical plane for the triangle when the device is placed on the road has been increased from five degrees to ten degrees in response to comments from manufacturers. The NHTSA has determined that the change will not alter the effectiveness of the device. The required distance above the ground of the lower edge of the triangle has been increased from one-half to one inch to improve the effectiveness of the device when water or mud collects on the roadway.

The minimum length of the legs of the triangle has been lowered from 18 to 17 inches, to correspond to the range of lengths permitted by the Bureau of Motor Carrier Safety.

The minimum width of the red reflective material has been clarified at the request of two manufacturers of reflex reflectors to correspond to industry terminology.

The definitions of the colors "red" and "orange" have been clarified in light of the comments, by the deletion of the definition in terms of nanometers. The NHTSA has concluded that definitions in terms of chromaticity coordinates and purity are sufficient. In order to standardize the requirement with respect to current color specification practice, the required chromaticity coordinates have been changed slightly.

The reflectivity requirement has been clarified to state that the material must be reflex reflective, and a definition of "reflex reflective" has been added to the standard. The reflectivity requirement in terms of candlepower per square inch has been found to be superfluous, and accordingly has been deleted.

The Economic Commission of Europe requested that the required total minimum candlepower per incident foot candle for an observation angle of 0.2 degrees be lowered from 120 candlepower to correspond to the international specifications. The NHTSA has concluded that 80 candlepower will provide sufficient protection and the minimum candlepower has been lowered accordingly.

In order to standardize the requirement with respect to current photometric practice, the luminance requirement for orange fluorescent material in the warning device has been raised from not less than 30 percent to not less than

35 percent of that of a flat magnesium oxide surface. The luminance criterion, "when compared under the light from an overcast sky," has been changed to read "when subjected to a 150-watt high pressure xenon compact arc lamp."

Many equipment manufacturers stated that the 200 degree Fahrenheit requirement for the high temperature conditioning is not justified by evidence showing that the device must withstand temperatures at that level when in use. This contention has been found to have merit, and the temperature requirement has been lowered to 150 degrees.

*Effective date:* January 1, 1974. Because the standard is issued later than anticipated, the effective date has been extended from January 1, 1972 to January 1, 1974. The NHTSA has concluded that this date will permit manufacturers of warning devices which do not have self-contained energy sources and which do not

meet the specifications of the standard to retool for manufacture of complying devices. It is therefore found, for good cause shown, that an effective date more than one year from the date of issuance is in the public interest.

In consideration of the above, a new § 571.125, Standard No. 125, Warning Devices, is added to Title 49, Code of Federal Regulations. . . .

This rule is issued under the authority of sections 103, 112, and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1401, 1407) and the delegation of authority at 49 CFR 1.51.

Issued on March 1, 1972.

Charles H. Hartman  
Acting Administrator

**37 F.R. 5038**  
**March 9, 1972**



**PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 125****Warning Devices****(Docket 4-2; Notice 5)**

The purpose of this notice is to respond to petitions for reconsideration of Motor Vehicle Safety Standard No. 125, Warning Devices, in § 571.125 of Title 49, Code of Federal Regulations. The standard was issued on March 1, 1972 (37 F.R. 5038).

The Amerace-Esna Corporation suggested that the 98% purity requirement for the red reflex reflective material be deleted since the trichromatic color coefficients provide sufficient definition of the red color. The NHTSA agrees, and furthermore has determined that the purity requirement for the orange fluorescent material should be deleted for the same reasons. Accordingly, S5.3.1(c) and S5.3.2(c) are deleted from the rule.

Hawes Industries, Inc. requested that the standard permit the use of a triangular warning device designed to be secured on the roof of a motor vehicle. They stated that the roof location was more convenient to the consumer than the recommended positioning behind the car and afforded as much or more protection. As stated in the preamble to the standard, a number of comments advocating positioning of the device on the vehicle roof or side were received and reviewed by the NHTSA in the formulation of the final rule. The Administration determined that placement of the device behind the vehicle would provide maximum protection by affording a greater distance for recognition and response by oncoming traffic. For this reason, it has recommended positioning of the device 100 feet behind the vehicle and requires an illustration indicating this location to be provided in the instructions. The standard does not prohibit manufacture or sale of a device capable of being mounted on a vehicle roof, as long as it meets all the Standard 125 requirements, including the capability of being set up on the ground.

The standard requires that an illustration depicting recommended positioning of the device be included with the instructions for the device. The Administration is amending S5.1.5(c) to clarify its intent that the illustration provided be substantially identical to Figure 3.

The standard as issued establishes separate width requirements for red reflex reflective material and orange fluorescent material affixed to the faces of the warning device. Rowland Development Corporation stated that it manufactures a "dual purpose fluorescent orange-red reflective material," and requested that the separate width requirements be suspended when such material is used. The request appears to have merit, but NHTSA has concluded that an evaluation of the requirements pertaining to the fluorescent orange material is necessary before it can respond to this request. A notice of proposed rulemaking containing proposed changes will be issued when the evaluation is completed. When the final revised requirements for the fluorescent material are established, a precise definition of the dual purpose material can be formulated.

Prof. D. M. Finch of the University of California stated that in order to clarify the color requirements the respective sources of illumination for the measurement of the red and orange color should be specified. The NHTSA agrees that this should be done, and accordingly S5.3.1 has been modified to specify the use of a lamp with a tungsten filament operating at 2,854° K for the red measurement. The source of illumination for the measurement of the orange color will be specified with the revision of the fluorescent material requirements referred to above.

The word "tungsten" is inserted before the word "filament" in the rule, as a clarification of the test conditions for red color and reflectivity,

**Effective: January 1, 1974**

In consideration of the foregoing, Motor Vehicle Safety Standard No. 125, Warning Devices, 49 CFR § 571.125, is amended. . . .

*Effective date:* January 1, 1974.

This notice is issued under the authority of sections 103, 112, and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1401,

1407) and the delegation of authority at 49 CFR 1.51.

Issued on June 19, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 12323**  
**June 22, 1972**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 125

### Warning Devices

#### Docket No. 4-2; Notice 6)

The purpose of this notice is to respond further to petitions for reconsideration and amendment of Motor Vehicle Safety Standard No. 125, Warning Devices, § 571.125 of Title 49, Code of Federal Regulations. The standard was issued on March 1, 1972, (37 F.R. 5038). On June 22, 1972, a previous notice of amendments and reconsideration of the standard was published (37 F.R. 12323).

With respect to the configuration of the device Rowland Development Corporation stated that it manufactures a dual purpose fluorescent orange and red reflective material and requested that the separate width requirements for red reflex reflective material and orange fluorescent material affixed to the faces of the device be suspended when such material is used. The NHTSA has concluded that the use of such dual purpose material as an alternative to separate material is permissible if the material is capable of meeting the requirements of Standard 125. S5.1.1, S5.2.3, S5.5, and S6.2(a) are hereby modified accordingly, and the separate width requirements will not be applicable when dual purpose material is used.

Tri-Lite interpreted the standard as permitting the use of a flag as part of a "combination signal device" as long as the device did not violate S5.2.1(b), relating to obstruction of the reflective and fluorescent material. In a previous letter to Tri-Lite the NHTSA had stated that the standard would be interpreted to allow such additions. (Docket entry N4-4-2-10, July 18, 1972.) Upon further consideration, the agency has determined that permitting additions to the device will lessen its effectiveness by degrading the uniformity of its shape. Accordingly, the use of additional shapes or attachments will not be permitted, and a new S5.2.6 is added to that effect.

A number of petitions regarding the orange fluorescent material were received. Personnel from the National Bureau of Standards suggested that the requirements for the color of the orange fluorescent material be amended so as not to penalize colors that have the same hue but are stronger than the present maximum y and minimum x values. The NHTSA agrees with the suggestion and S5.3.2 has been amended accordingly.

Tri-Lite stated that the fluorescent material deteriorates over time and is therefore unreliable. It requested that the provision of orange fluorescent material on the device be made optional. The NHTSA recognizes that deterioration of fluorescence is a possibility; however, it is felt that the requirement of an opaque container and the improving technology of fluorescent materials should offset the possible problem. It is anticipated that the device will be used only infrequently, in emergencies, by most drivers. The request of Tri-Lite is therefore denied.

Rowland Corp. requested that the luminance requirement be expressed in terms relative to the amount of fluorescent material affixed to the device rather than the percentage figure of magnesium oxide presently required. The agency position is that a minimum level of luminance is necessary for identifiability, but that a somewhat lower limit for luminance of the orange material could be suitable if more material is used. Accordingly, S5.5 has been amended to lower the minimum relative luminance relative to magnesium oxide from 35% to 25%, and to require a minimum product of that relative luminance and width in inches of the device of 44. Dayglo Color Corp. requested that two sources of light for luminance test, Source C and Source D-65, be permitted in addition to the xenon arc lamp

specified in the standard. The NHTSA has concluded that the most consistent test results are provided when the material is diffusely irradiated with undispersed light from a high-pressure xenon arc lamp to simulate daytime conditions. As a general rule, alternative test procedures for a single property are inadvisable, and no sufficient justification for them has been shown here. Therefore the Dayglo request is denied.

In light of evidence that differing relative luminance values are obtained from different procedures used to measure it, a procedure paragraph (S6.3) for the luminance testing of the orange fluorescent material has been added to the standard. The procedure is adapted from the publication "Colorimetry", of the International Commission on Illumination (CIE Publication No. 15, E-1.3.1, 1971).

Two petitions dealt with the stability requirements. Rowland Development Corporation requested that the standard permit the manufacture of a triangle device constructed of flexible material which is secured at the outer corners of the triangle and is otherwise free to flex with the wind. Safety Triangles Company requested that the device be permitted to tilt to a position up to 30° from the vertical rather than the presently allowed 10°. These requests were directed at permitting manufacturers to produce lighter and cheaper devices. The NHTSA has concluded that if the triangle is permitted to flex in the wind or tilt to a position up to 30° from the

vertical, the attitude of the triangle is altered so that the shape of the equilateral triangle is distorted, thus detracting from one of the goals of the standard. The present performance requirements and the consequent cost factors have been found to be reasonable. These requests are accordingly denied.

With respect to reflectivity testing, Rowland stated that candlepower requirements for an observation angle of 0.2° were superfluous and not related to true highway situations, and requested their deletion. The NHTSA has determined in the formulation of the standard that the specified reflectivity requirements allow a maximum recognition and detection distance to oncoming traffic. Accordingly, the requirements for the 0.2° observation angle are retained.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 125, Warning Devices, 49 CFR § 571.125, is amended. . . .

Effective date: January 1, 1974.

(Sec. 103, 112, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1407; delegation of authority at 49 CFR 1.51.)

Issued on January 23, 1973.

Douglas W. Toms  
Administrator

**38 F.R. 2760**  
**January 30, 1973**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 125

### Warning Devices

(Docket No. 74-2; Notice 10)

The purpose of this amendment to Motor Vehicle Safety Standard No. 125 (49 CFR 571.125), Warning Devices, is to prescribe the color specifications for the orange and red materials used in the warning devices authorized under the standard.

On April 6, 1973, the NHTSA issued a proposal on this subject (38 F.R. 8752). The comments from industry were generally in agreement with the method for testing the orange fluorescent material, although several requested that light source C be allowed for testing of the orange fluorescent material. After consultation with testing laboratories and the National Bureau of Standards, NHTSA has concluded that for purposes of obtaining repeatable results and simulating daylight conditions, source C does not provide the necessary ultraviolet radiation. Therefore, the use of the xenon arc lamp has been incorporated into the standard and will be required for testing of the orange color and luminance of the daylight fluorescent material.

The majority of the commenters and the National Bureau of Standards agreed that the direct illumination method for testing of standard orange fluorescent material for both color and luminance should be continued, and the integrating sphere method should be used for dual-purpose materials. The industry, including the testing laboratories, have had sufficient time to utilize this method and repeatable results have been obtained.

The color definition equation for the orange fluorescent material has been broadened from  $x+y=0.943$  to  $x+y=0.93$ . The majority of

those commenting had no objection to broadening the area of the orange fluorescent material, but one equipment manufacturer desired the red boundary to be extended from  $y=0.35$  to  $y=0.34$ . NHTSA concludes that to do so would place this boundary line too near the red area for proper differentiation between orange and red. Since orange is used as a daylight material, it should not be similar to the red material in color.

As proposed, the three-digit system in the straight-line equations for the boundary of the orange and red colors has been converted to a two-digit system, as this degree of accuracy is sufficient for general testing purposes.

The final amendment to the standard establishes the type of light to be used for testing the orange material used in dual purpose material. Of particular importance in this test procedure is separating the red retroreflective and orange fluorescent material. The majority of the commenters and the National Bureau of Standards recommended that the xenon arc lamp be used, as it provides sufficient ultraviolet radiation to simulate daylight conditions with overcast sky, if the unmodified spectrum illuminating the material is at an angle of incidence of  $45^\circ$  and the angle of observation is  $90^\circ$ . In this procedure, which is adopted, the material is illuminated diffusely by an integrating sphere.

Because a number of amendments to Standard No. 125 have been issued, the standard is hereby reissued in its entirety.

In light of the foregoing, 49 CFR § 571.125, Standard No. 125, Warning Devices, is amended to read as set forth below.

Effective: November 11, 1974

Effective date: Nov. 11, 1974.

Issued on: Aug. 2, 1974.

(Sec. 103, 119, Pub. L. 89-563) 80 Stat. 718,  
15 U.S.C. 1392, 1407; delegation of authority at  
49 CFR 1.51.)

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James B. Gregory  
Administrator  
**39 F.R. 28636**  
**August 9, 1974**

## MOTOR VEHICLE SAFETY STANDARD NO. 125

### Warning Devices

**S1. Scope.** This standard establishes requirements for devices, without self-contained energy sources, that are designed to be carried in motor vehicles and used to warn approaching traffic of the presence of a stopped vehicle, except for devices designed to be permanently affixed to the vehicle.

**S2. Purpose.** The purpose of this standard is to reduce deaths and injuries due to rear end collisions between moving traffic and disabled vehicles.

**S3. Application.** This standard applies to devices without self-contained energy sources, that are designed to be carried in motor vehicles and used to warn approaching traffic of the presence of a stopped vehicle, except for devices designed to be permanently affixed to the vehicle.

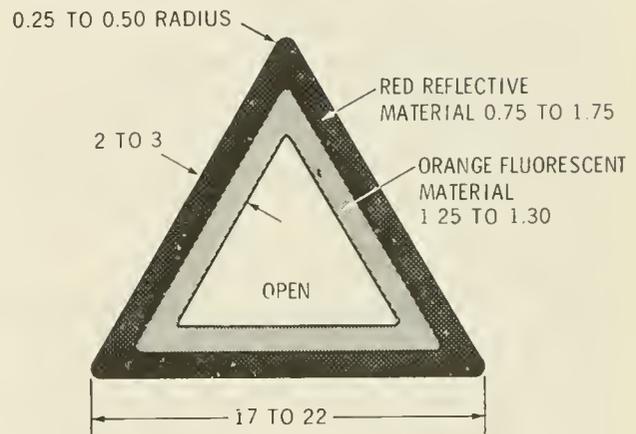
**S4. Definitions.** "Entrance angle" means the angle having as its sides the line through the center, and normal to the face, of the object to be tested, and the line from the center of the object to the center of the source of illumination (Figure 2).

"Fluorescent" means the property of emitting visible light due to the absorption of radiation of a shorter wave-length which may be outside the visible spectrum.

"Observation angle" means the angle having as its sides the line from the observation point to the center of the object to be tested and the line from the center of that object to the center of the source of illumination (Figure 2).

"Reflex reflective" means reflective of light in directions close to the direction of incident light, over a wide range of variations in the direction of incident light.

### WARNING DEVICE



DIMENSIONS OF WARNING DEVICE (Inches)

Figure 1

### S5. Requirements.

#### S5.1 Equipment.

**S5.1.1** Reflex reflective material and fluorescent material that meet the requirements of this standard shall be affixed to both faces of the warning device. Alternatively, a dual purpose orange fluorescent and red reflective material that meets the requirements of this standard (hereafter referred to as "dual purpose material") may be affixed to both faces in place of the reflective and fluorescent materials.

**S5.1.2** Each warning device shall be protected from damage and deterioration—

(a) By enclosure in an opaque protective reusable container, except that two or three warn-

ing devices intended to be sold for use as a set with a single vehicle may be enclosed in a single container; or

(b) By secure attachment to any light-tight, enclosed and easily accessible compartment of a new motor vehicle with which it is supplied by the vehicle manufacturer.

**55.1.3** The warning device shall be designed to be erected, and replaced in its container, without the use of tools.

**55.1.4** The warning device shall be permanently and legibly marked with:

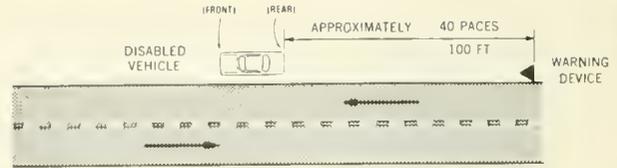
- (a) Name of manufacturer;
- (b) Month and year of manufacture, which may be expressed numerically, as "6/72", and
- (c) The symbol DOT, or the statement that the warning device complies with all applicable Federal motor vehicle safety standards.

**55.1.5** Each warning device shall have instructions for its erection and display.

a) The instructions shall be either indelibly printed on the warning device or attached in such a manner that they cannot be easily removed.

(b) Instructions for each warning device shall include a recommendation that the driver activate the vehicular hazard warning signal lamps before leaving the vehicle to erect the warning device.

(c) Instructions shall include the illustration depicted in Figure 3 indicating recommended positioning.



RECOMMENDED WARNING DEVICE POSITIONING

Figure 3

**55.2 Configuration.**

**55.2.1.** When the warning device is erected on level ground:

(a) Part of the warning device shall form an equilateral triangle that stands in a plane not more than 10° from the vertical, with the lower edge of the base of the triangle horizontal and not less than 1 inch above the ground.

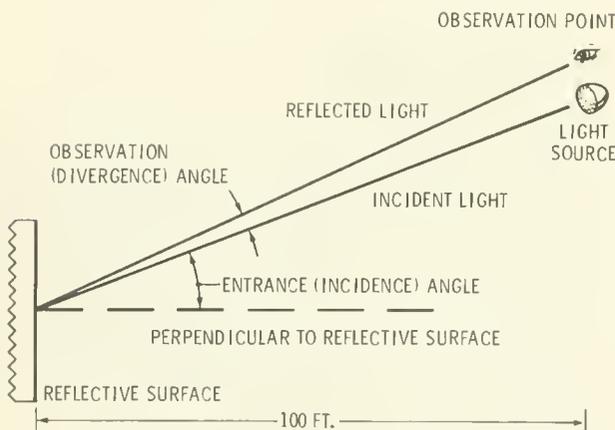
(b) None of the required portion of the reflective material and fluorescent material shall be obscured by any other part of the warning device except for any portion of the material over which it is necessary to provide fasteners, pivoting beads or other means to allow collapsibility or support of the device. In any event, sufficient reflective and fluorescent material shall be used on the triangle to meet the requirements of S5.4 and S5.5.

**55.2.2** Each of the three sides of the triangular portion of the warning device shall not be less than 17 and not more than 22 inches long, and not less than 2 and not more than 3 inches wide (Figure 1).

**55.2.3** Each face of the triangular portion of the warning device shall have an outer border of red reflex reflective material of uniform width and not less than 0.75 and not more than 1.75 inches wide, and an inner border of orange fluorescent material of uniform width and not less than 1.25 and not more than 1.30 inches wide (Figure 1). However, this requirement shall not apply if the dual purpose material is used.

**55.2.4** Each vertex of the triangular portion of the warning device shall have a radius of not less than 0.25 inch and not more than 0.50 inch.

**55.2.5** All edges shall be rounded or chamfered, as necessary, to reduce the possibility of cutting or harm to the user.



REFLECTIVITY TEST DIAGRAM

Figure 2

**55.2.6** The device shall consist entirely of the triangular portion and attachments necessary for its support and enclosure, without additional visible shapes of attachments.

tion is a 150-watt high pressure xenon compact arc lamp. Expressed in terms of the International Commission on Illumination (CIE) 1931 standard colorimetric observer system, the chromaticity coordinates of the orange fluorescent material shall lie within the region bounded by the spectrum locus and the lines on the diagram defined by the following equations:

<i>Boundary</i>	<i>Equation</i>
Yellow	$y = 0.49x + 0.17$
White	$x + y = 0.93$
Red	$y = 0.35$

The 150-watt high pressure xenon compact arc lamp shall illuminate the sample using the unmodified spectrum at an angle of incidence of  $45^\circ$  and an angle of observation of  $90^\circ$ . If dual purpose material is being tested, it shall be illuminated by a 150-watt high pressure xenon compact arc lamp, whose light is diffused by an integrating sphere.

**55.4 Reflectivity.** When the red reflex reflective material on the warning device is tested in accordance with S6.2, both before and after the warning device has been conditioned in accordance with S6.1, its total candlepower per incident foot candle shall be not less than the values specified in Table I for each of the listed entrance angles.

**55.5 Luminance.** When the orange fluorescent material on the warning device is tested in accordance with S6.3, both before and after the warning device has been conditioned in accordance with S6.1, it shall have a minimum relative luminance of 25 percent of a flat magnesium oxide surface and a minimum product of that relative luminance and width in inches of 44.

**55.6 Stability.** When the warning device is erected on a horizontal brushed concrete surface both with and against the brush marks and subjected to a horizontal wind of 40 miles per hour in any direction for 3 minutes—

(a) No part of it shall slide more than 3 inches from its initial position;

(b) Its triangular portion shall not tilt to a position that is more than  $10^\circ$  from the vertical; and

(c) Its triangular position shall not turn through a horizontal angle of more than  $10^\circ$  in either direction from the initial position.

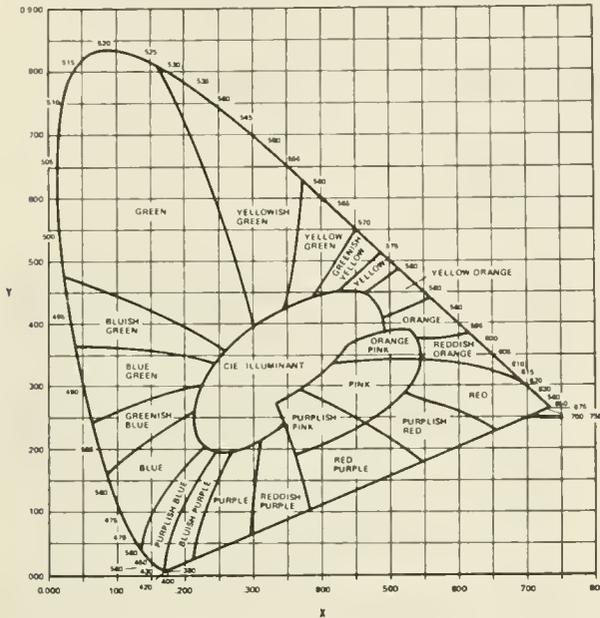


Figure 4 - CIE Chromaticity Diagram

### 55.3 Color.

**55.3.1** The color of the red reflex reflective material on the warning device shall have the following characteristics, both before and after the warning device has been conditioned in accordance with S6.1, when the source of illumination is a lamp with a tungsten filament operating at  $2856^\circ$  Kelvin color temperature. Expressed in terms of the International Commission on Illumination (CIE) 1931 standard colorimetric observer system (CIE chromaticity diagram, Figure 4), the chromaticity coordinates of the red reflex reflective material shall lie within the region bounded by the spectrum locus and the lines on the diagram defined by the following equations:

<i>Boundary</i>	<i>Equations</i>
Yellow	$y = 0.33$
White	$x + y = 0.98$

**55.3.2** The color of the orange fluorescent material on the warning device shall have the following characteristics, both before and after the warning device has been conditioned in accordance with S6.1, when the source of illumina-

TABLE 1. Total Minimum Candlepower Per Incident Foot Candle  
Entrance Angles - Degrees

Observation Angles - Degrees	Entrance Angles - Degrees						
	0	10 up	10 down	20 left	20 right	30 left	30 right
0.2	80	80	80	40	40	8.0	8.0
1.5	0.8	0.8	0.8	0.4	0.4	0.08	0.08

**55.7 Durability.** When the warning device is conditioned in accordance with S6.1, no part of the warning device shall become warped or separated from the rest of the warning device.

**56. Test Procedures.**

**56.1 Conditions.**

**56.1.1** Submit the warning device to the following conditioning sequence, returning the device after each step in the sequence to ambient air at 68° F. for at least 2 hours.

(a) Minus 40° F. for 16 hours in a circulating air chamber using ambient air which would have not less than 30 percent and not more than 70 percent relative humidity at 70° F.;

(b) 150° F. for 16 hours in a circulating air oven using ambient air which would have not less than 30 percent and not more than 70 percent relative humidity at 70° F.;

(c) 100° F. and 90 percent relative humidity for 16 hours;

(d) Salt spray (fog) test in accordance with American Society of Testing and Materials Standard B-117, Standard Method of Salt Spray (fog) testing, August 1964, except that the test shall be for 4 hours rather than 40 hours; and

(e) Immersion for 2 hours in water at a temperature of 100° F.

**56.2 Reflectivity Test.** Test the red reflex reflective material as follows:

(a) Unless dual purpose material is used, prevent the orange fluorescent material from affecting the photometric measurement of the reflectivity of the red reflex reflective material, either by separation or masking.

(b) Use a lamp with a tungsten filament operating at 2856° Kelvin color temperature as the source of illumination.

(c) Place the source of illumination 100 feet from the red reflex reflective material (Figure 2).

(d) Place the observation point directly above the source of illumination (Figure 2).

(e) Calculate the total candlepower per incident foot candle of the red reflex reflective material at each of the entrance and observation angles specified in Table 1.

**56.3 Luminance Test.** Test the orange fluorescent material as follows:

(a) Unless dual purpose material is used, prevent the red reflex reflective material from affecting the photometric measurement of the luminance of the orange fluorescent material.

(b) Using a 150-watt high pressure xenon compact arc lamp as the light source, illuminate the test sample at an angle of incidence of 45° and an angle of observation of 90°. If dual purpose material is being tested, illuminate the sample diffusely through an integrating sphere.

(c) Measure the luminance of the material at a perpendicular viewing angle, with no ray of the viewing beam more than 5° from the perpendicular to the specimen.

(d) Repeat the procedure for a flat magnesium oxide surface, and compute the quotient (percentage) of the luminance of the material relative to that of the magnesium oxide surface.

37 F.R. 5038  
March 9, 1972

## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 126

### Truck-Camper Loading

(Docket No. 71-7; Notice 2)

This notice amends Part 571 of Title 49, Code of Federal Regulations, to add a new Motor Vehicle Safety Standard No. 126 (49 CFR 571.126) that requires manufacturers of slide-in campers and of trucks that would accommodate them to provide information concerning proper loading and load distribution. A notice of proposed rulemaking on this subject was published on April 9, 1971 (36 F.R. 6837).

The purpose of the new standard is to provide information that can be used to reduce overloading and improper load distribution in truck-camper combinations, and to prevent accidents resulting from the adverse effects of these conditions on vehicle handling and braking. Standard No. 126 requires manufacturers of slide-in campers to permanently affix a label to a rear surface of each camper that includes the weight of the camper when it contains standard equipment, and water, bottled gas, and ice box with ice or refrigerator. The camper manufacturer is also required to provide, in an owner's manual or other document delivered with the camper, a picture showing the location of the longitudinal center of gravity of the camper when loaded and a picture showing a proper match of the slide-in camper on a typical truck. Standard No. 126 also requires manufacturers of trucks to which a camper could be attached to provide, in an operator's manual or other document delivered with the truck, a picture showing the manufacturer's recommended longitudinal center of gravity zone for the cargo weight rating, and one depicting the proper match of a truck and slide-in camper.

Standard No. 126 differs from the proposal in several aspects. The standard as proposed would have applied to incomplete vehicles intended for completion as trucks, and to multipurpose passenger vehicles with a GVWR of 10,000 pounds

or less. These categories have been excluded from the final rule, which applies to trucks that would accommodate slide-in campers. These generally are pick-up trucks. In excluding other proposed categories the NHTSA considers that the information the manufacturer of an incomplete vehicle must furnish pursuant to 49 CFR Part 568, *Vehicles Manufactured in Two or More Stages*, should be sufficient to assist a final assembler in permanently installing a chassis-mount camper on a truck chassis, or in assembling a vehicle such as a motor home.

The proposal would also have required that a label be permanently affixed to each cargo compartment that would specify the maximum recommended weight for a load placed in the compartment. Commenters argued persuasively that camper owners would disregard a series of weight capacity labels on all storage compartments, and the proposal was not adopted. The final rule requires the certification label and the owner's manual to provide a figure denoting camper weight, which as noted previously includes the weight of standard equipment, a refrigerator, or ice box with ice, and maximum capacity of water and bottled gas. The cubic capacity of the refrigerator or weight of ice, the weight of bottled gas, and the gallons of water encompassed in the maximum weight figure will also be listed on the permanent label and in the owner's manual. The camper manufacturer may exclude any of these items from the label if the camper is not designed to accommodate them, provided that a notation to that effect appears in the owner's manual. The standard also requires a manufacturer to provide a listing of optional or additional equipment that the camper is designed to carry, and the respective weight of each if the unit weight exceeds 20 pounds.

The label will also state the month and year of manufacture, and a recommendation that the user consult the owner's manual or data sheet for the weight of optional and additional equipment. The label is to be mounted in a plainly visible location on a surface at the rear of the camper other than the roof, steps or bumper extension.

The proposed reference point, or the distances of the camper center of gravity from the reference point, have not been adopted for use on the exterior label. Manufacturers of campers generally have had no experience with the relatively complex vertical center of gravity measurement techniques. Truck manufacturers pointed out a number of variables that would have to be considered, and stated that the limiting envelope would not be rectangular as implied by the proposal. Other comments objected to the end of the truck's axle shaft as a reference point for specifying a recommended cargo center of gravity zone. Variations in the longitudinal center of gravity of the load are, however, known to have a direct relationship to a truck's gross axle loading, and can adversely affect the steering and stopping ability of the vehicle. The camper manufacturer will therefore be required to provide in the owner's manual a picture showing the location of the camper's longitudinal center of gravity within 2 inches, under specified load conditions. A manufacturer can easily measure the longitudinal center of gravity of a slide-in camper by balancing it on a transverse horizontal rod. The camper owner's manual must also contain specific advice on proper choice of truck to which a camper may be mounted, and proper loading of the camper once it is attached. Truck

manufacturers in turn are required to include in the operator's manual a picture showing the recommended longitudinal center of gravity zone for the cargo weight rating and loading recommendations.

In order to allow the relatively small camper manufacturers time to consider the recommendations of truck manufacturers, and to modify camper designs if needed, a camper manufacturer need not provide center of gravity location information until July 1, 1973.

*Effective date:* January 1, 1973, with additional requirements effective July 1, 1973. Because compliance with the rule does not involve extensive leadtime, the Administrator finds for good cause shown that an effective date earlier than one hundred eighty days after issuance is in the public interest.

In consideration of the foregoing, 49 CFR Part 571 is amended by adding § 571.126, Standard No. 126, *Truck-Camper Loading* . . .

This notice is issued under the authority of Sections 103, 112, 114, and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1401, 1403, and 1407) and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on August 3, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 16497**  
**August 15, 1972**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 126

### Truck-Camper Loading (Docket No. 71-7; Notice 4)

This notice responds to petitions for reconsideration of 49 CFR § 571.126, Motor Vehicle Safety Standard No. 126, *Truck-Camper Loading*. The portion of the regulation requiring information to be provided by camper manufacturers is retained as a Federal motor vehicle safety standard, and a vehicle information number is added to the list of information to be provided. The portion of the rule applicable to truck manufacturers is reissued as a consumer information regulation by a separate notice (37 F.R. 26607).

Standard No. 126, establishing requirements for slide-in campers and trucks that would accommodate them, was published on August 15, 1972 (37 F.R. 16497). Thereafter, pursuant to 49 CFR § 553.35, petitions for reconsideration of the standard were filed by Chrysler Corporation (Chrysler), Ford Motor Company (Ford), General Motors Corporation (GM), Jeep Corporation (Jeep), Motor Vehicle Manufacturers Association of the United States, Inc. (MVMA), Recreational Vehicle Institute, Inc. (RVI), and Toyota Motor Sales, U.S.A., Inc. (Toyota).

In response to information contained in several of these petitions the standard is being amended in certain respects. The Administrator has declined to grant requested relief from other requirements of the standard.

1. *Statutory Authority*. Standard No. 126 as issued applied to slide-in campers and to trucks that would accommodate them. It required manufacturers of slide-in campers to attach to their products a label containing the name of the manufacturer, the month and year of manufacture, a certification of conformity, and information concerning the camper's maximum weight. The standard also required camper manufacturers to

provide the same information and certain additional items in a manual or other document to accompany each camper. A parallel requirement was adopted applicable to truck manufacturers; they were required to provide information in a manual or other document supplied with their products that would assist truck owners in choosing a properly matched camper.

Chrysler, Ford, GM, Jeep, and MVMA questioned the authority to issue the requirements of 49 CFR § 571.126 as a Federal motor vehicle safety standard rather than in the form of a Consumer Information Regulation (49 CFR Part 575), alleging that Standard No. 126 is "neither a performance standard nor does it provide any objective criteria for determining compliance."

The NHTSA does not agree that it lacks authority to issue Standard No. 126 in the form in which it appeared. Actually, the regulation was issued under the combined authority of four sections of the Act: section 103 (the authority for the Federal motor vehicle safety standards), section 112 (the primary authority for technical information and data to be provided by a manufacturer to NHTSA and the consumer), section 114 (the authority for vehicle and equipment certification) and section 119 (the general rule-making authority). Many of the existing standards contain information requirements, and it is the position of this agency that such provisions fully satisfy the statutory criteria as objective performance requirements. The question therefore is in most respects the merely formal one of whether the rule is called a "safety standard" or a "consumer information regulation," and codified accordingly.

On reconsideration of all aspects of the standard, however, this agency has determined that there is an advantage to issuing the requirements for trucks in the form of a consumer information regulation. 49 CFR § 575.6(b) requires all Part 575 consumer information to be made available to prospective purchasers in dealer showrooms, and paragraph (c) of that section requires such information to be furnished directly to the NHTSA. Neither of these requirements applies to information furnished pursuant to Part 571 safety standards. Part 575 consumer information regulations are enforceable in substantially the same manner and with the same sanctions as safety standards. The requirements for trucks in 49 CFR § 571.126 are therefore reissued as a new consumer information regulation, 49 CFR § 575.103, by an action published in this issue, 37 F.R. 26607.

2. *Effective date.* The requirement for pictures showing camper center of gravity and proper truck-camper match that camper manufacturers were to provide as of July 1, 1973, is being deferred 2 months, and will not be required until September 1, 1973. RVI has petitioned for an extension of the effective date of these requirements to January 1, 1974, on the basis that the extension "would give the relatively small camper manufacturers additional time to conform camper design to the center of gravity envelopes developed by the truck manufacturers." The regulation, however, only requires manufacturers to provide information, not to redesign their products. The NHTSA finds that RVI has shown insufficient justification to support its request, and the petition is denied.

3. *Definitions.* RVI petitioned that its definition of "camper" be adopted so that there would be no confusion within the recreational vehicle industry as to whether the standard applied to motor homes and pickup covers. RVI's petition was similar to the one it submitted for reconsideration of Standard No. 205, *Glazing Materials*. The NHTSA has not adopted the RVI definition, but it has defined the terms "camper" and "slide-in camper" so as to clarify these terms and differentiate them from "motor home" and "pickup cover," also defined in Standard No. 205. "Cargo weight rating" was defined as "the maximum weight of cargo . . . that can safely be

carried by a vehicle under normal operating conditions. . . ." Ford objects that the definition is subjective and urges that the term be redefined as "the maximum weight of cargo . . . that the truck manufacturer specifies may be carried on the vehicle." The NHTSA concurs generally with Ford's views. The definition has been rewritten to make clear that the rating, like GVWR and GAWR, is to be assigned at the discretion of the manufacturer.

4. *Information.* Ford believes the reference to "total load" in paragraph S5.1.2(c) is misleading "in that users may easily understand this to be the total load on the truck." It suggests substitution of the term "cargo load." Ford's point is well made, and the term is redesignated "total cargo load" as a clarification.

Toyota has asked that paragraph S5.1.2(e) be amended to substitute four inches for the requirement that camper manufacturers provide a picture showing the location of the center of gravity of the camper within an accuracy of two inches under the loaded condition. The petition is denied. The intent of the specification is to insure an accuracy within two inches, in either direction, in effect, a range of four inches. The NHTSA does not consider this tolerance to be overly demanding.

Finally, RVI states that its members have had difficulty in interpreting Figure 2 and requests the NHTSA to more clearly indicate "that the terminology 'Mount at Aft End of Truck Cargo Area' means that the designated point in the figure signifies the point where the identified surface of the camper abuts the rearmost edge or surface of the cargo area of the truck, presumably the tailgate in most configurations." To clarify its intent the NHTSA is changing the language in question to "point that contacts rear end of truck bed."

5. *Vehicle Identification Number (VIN.)* The NHTSA proposed on August 15, 1972 (Docket No. 71-7; Notice 3, F.R. 16505) that slide-in campers be identified by a VIN, consisting of arabic numerals, roman letters, or both. The notice also proposed to require that the VIN of two campers manufactured by a manufacturer within a ten year period shall not be identical. No objections were raised to the proposal, and Standard No. 126 is amended to adopt the pro-

posed requirements, reworded slightly effective January 1, 1973.

In consideration of the foregoing, 49 CFR § 571.126, Motor Vehicle Safety Standard No. 126, is amended. . . .

*Effective date:* January 1, 1973, with additional requirements effective September 1, 1973. Because the amendment consists principally of the reissue of existing requirements, and compliance with the amendment requiring a VIN does not involve extensive leadtime, the Administrator finds for good cause shown that an effective date earlier than 180 days after issuance is in the public interest.

This notice is issued under the authority of sections 103, 112, 114, and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1401, 1403, and 1407) and the delegation of authority from the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on: December 6, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 26605**  
**December 14, 1972**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 126

### Truck-Camper Loading

(Docket No. 71-7; Notice 7)

This notice responds to a petition for reconsideration of 49 CFR § 571.126, Motor Vehicle Safety Standard No. 126, *Truck-camper loading*, with an amendment allowing optional wording of a portion of the placard to be affixed to campers, and of other required information. The amendments are effective upon publication in the *Federal Register*.

On August 15, 1972 Motor Vehicle Safety Standard No. 126 was originally published (37 F.R. 16497). In response to petitions for reconsideration the standard was republished on December 14, 1972 (37 F.R. 26605) with amendments that included minor changes in the text of information required to be furnished to purchasers of slide-in campers.

Paragraph S5.1.2(a) of Standard No. 126 requires each manufacturer of a slide-in camper to provide in a manual or other document delivered with each camper "the statement and information provided on the certification label as specified in paragraph S5.1.1". Among this information is the month and year that the camper was manufactured. The Trailer Coach Association has asked in a letter dated December 29, 1972 that wording such as "see certification label for date of manufacture" be substituted for the month and year of manufacture, contending that "to require manufacturers to list the month and year of manufacture in each vehicle owner's manual would be an unnecessary hardship in view of the production and shipping schedule which varies greatly from time to time during the year."

The NHTSA believes that the request of TCA is reasonable, and is treating TCA's letter as a petition for reconsideration filed pursuant to 49 CFR 553.35. However, since the information

requirement became effective January 1, 1973, and because of the possibility that manufacturers now providing this data may wish to continue to do so, the manufacturer should have the option of including either the month and year of manufacture or a reference to the certification label. The standard is being amended to provide this option.

In the amendments published on December 14, 1972 two minor changes were made in terminology. In Paragraph S5.1.2(c) the phrase "total load", which appears twice, was changed to "total cargo load" as a clarification. Further clarification was provided in an amendment to Figure 2, Camper Center of Gravity Information where the legend "Mount at Aft End of Truck Cargo Area" was changed to "Point That Contacts Rear End of Truck Bed". In view of the amendments to § 575.103 delaying the effective date 30 days until April 1, 1973, and permitting use of the earlier form until October 1, 1973 (Docket No. 71-7; Notice 6 (38 F.R. 4400)), camper manufacturers who have printed manuals with the old terminology should be afforded the same opportunity as truck manufacturers to exhaust obsolete stocks of materials. Appropriate amendments are therefore made to Standard No. 126, including a 30 day delay in the pictorial information that was to have been provided as of September 1, 1973.

In consideration of the foregoing 49 CFR § 571.126 Motor Vehicle Safety Standard No. 126 is amended . . .

*Effective date:* February 14, 1973. Because the amendments create no additional burden it is found for good cause that an effective date earlier than one hundred eighty days after issuance is in the public interest.

Effective: February 14, 1973

(Sec. 103, 112, 114, and 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1403 and 1407; delegation of authority at 49 CFR 1.51.)

Issued on February 12, 1973.

Douglas W. Toms  
Administrator

**38 F.R. 4399**  
**February 14, 1973**

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**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 126****Truck-Camper Loading****(Docket No. 71-7; Notice 8)**

This notice corrects the amendment to 49 CFR § 571.126, Standard No. 126, *Truck-camper loading*, published on February 14, 1973 (38 F.R. 4399). The amendment to paragraph S5.1.2(a) erroneously referred to "the information required by subparagraphs (c) and (d) of paragraph S5.1.1". The reference should have been to "subparagraphs (b) and (c)".

Additionally, the opening statement of the preamble erroneously stated that the amendment allowed "optional wording of a portion of the placard to be affixed to campers, and of other required information". The amendment itself correctly allowed optional wording of informa-

tion provided in the manual or other document delivered with the camper, not on the placard.

*Effective date:* March 9, 1973. Because the amendment corrects an error, it is found for good cause shown that an immediate effective date is in the public interest.

(Sec. 103, 112, 114 and 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1403, and 1407; delegation of authority at 49 CFR 1.51.)

Issued on March 5, 1973.

Douglas W. Toms  
Administrator

**38 F.R. 6392**

**March 9, 1973**



## MOTOR VEHICLE SAFETY STANDARD NO. 126

### Truck-Camper Loading

(Docket No. 71-7; Notice 2)

**S1. Scope.** [This standard requires manufacturers of slide-in campers to affix a label to each camper that contains information relating to certification, identification, and proper loading, and to provide more detailed loading information in the owner's manual. (37 F.R. 26605—December 14, 1972. Effective: 1/1/73)]

**S2. Purpose.** [The purpose of this standard is to provide information that can be used to reduce overloading and improper load placement in truck-camper combinations, and unsafe truck-camper matching, in order to prevent accidents resulting from the adverse effects of these conditions on vehicle steering and braking. (37 F.R. 26605—December 14, 1972. Effective: 1/1/73)]

**S3. Application.** [This standard applies to slide-in campers. (37 F.R. 26605—December 14, 1972. Effective: 1/1/73)]

#### S4. Definitions.

"Camper" means a structure designed to be mounted in the cargo area of a truck, or attached to an incomplete vehicle with motive power, for the purpose of providing shelter for persons.

["Cargo weight rating" means the value specified by the manufacturer as the cargo-carrying capacity, in pounds, of a vehicle, exclusive of the weight of occupants in designated seating positions. (37 F.R. 26605—December 14, 1972. Effective: 1/1/73)]

"Slide-in camper" means a camper having a roof, floor and sides, designed to be mounted on and removable from the cargo area of a truck by the user.

#### S5. Requirements.

##### S5.1 Slide-in camper.

**S5.1.1 Labels.** Each slide-in camper shall have permanently affixed to it, in a manner that it

cannot be removed without defacing or destroying it, in a plainly visible location on an exterior rear surface other than the roof, steps, or bumper extension, a label containing the following information in the English language lettered in block capitals and numerals not less than  $\frac{3}{32}$ -inch high, of a color contrasting with the background, in the order shown below and in the form illustrated in Figure 1.

MFG. BY: (CAMPER MANUFACTURER'S NAME)
(MONTH AND YEAR OF MANUFACTURE)
THIS CAMPER CONFORMS TO ALL APPLICABLE FEDERAL MOTOR VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.
CAMPER WEIGHT IS _____ LBS. MAXIMUM WHEN IT CONTAINS STANDARD EQUIPMENT, _____ GAL. OF WATER, _____ LBS. OF BOTTLED GAS, AND _____ CUBIC FT. REFRIGERATOR (or ICE BOX WITH _____ LBS. OF ICE, as applicable). CONSULT OWNER'S MANUAL (or DATA SHEET as applicable) FOR WEIGHTS OF ADDITIONAL OR OPTIONAL EQUIPMENT.
(VEHICLE IDENTIFICATION NUMBER)

FIGURE 1. Label for Campers.

(a) Name of camper manufacturer. The full corporate or individual name of the actual assembler of the camper shall be spelled out, except that such abbreviations as "Co.," or "Inc.," and their foreign equivalents, and the first and middle initials of individuals may be used. The name of the manufacturer shall be preceded by the words "Manufactured By" or "Mfd. By".

(b) Month and year of manufacture. It may be spelled out (*e.g.*, "June 1973"), or expressed in numerals (*e.g.*, "6/73").

(c) The statement: "This camper conforms to all applicable Federal Motor Vehicle Safety

Standards in effect on the date of manufacture shown above." The expression "U.S." or "U.S.A." may be inserted before the word "Federal".

(d) The following statement completed as appropriate: "CAMPER WEIGHT IS \_\_\_\_\_ LBS. MAXIMUM WHEN IT CONTAINS STANDARD EQUIPMENT, \_\_\_\_\_ GAL. OF WATER, \_\_\_\_\_ LBS. OF BOTTLED GAS, AND \_\_\_\_\_ CUBIC FT. REFRIGERATOR (or ICE BOX WITH \_\_\_\_\_ LBS. OF ICE, as applicable). CONSULT OWNER'S MANUAL (or DATA SHEET as applicable) FOR WEIGHTS OF ADDITIONAL OR OPTIONAL EQUIPMENT."

"Gal. of water" refers to the volume of water necessary to fill the camper's fresh water tanks to capacity. "Lbs. of bottled gas" refers to the weight of gas necessary to fill the camper's bottled gas tanks to capacity. The statement regarding a "Refrigerator" or "Icebox" refers to the capacity of the refrigerator with which the vehicle is equipped or the weight of the ice with which the icebox may be filled. Any of these items may be omitted from the statement, if the corresponding accessories are not included with the camper, provided that the omission is noted in the camper owner's manual as required in paragraph S5.1.2(a).

[(e) Vehicle Identification Number. Each slide-in camper shall have a number assigned by its manufacturer for identification purposes consisting of arabic numerals, roman letters or both. No two slide-in campers manufactured by the same manufacturer within any 10-year period shall have the same Vehicle Identification Number. (37 F.R. 26605—December 14, 1972. Effective: 1/1/73)]

**S5.1.2 Owner's manual.** [Each slide-in camper manufacturer shall provide with each camper a manual or other document containing the information specified in S5.1.2(a) through S5.1.2(d). The information in S5.1.2(e) and S5.1.2(f) shall also be provided with each camper manufactured

on or after October 1, 1973. (38 F.R. 4399—February 14, 1973. Effective: 2/14/73)]

(a) [The statement and information provided on the certification label as specified in paragraph S5.1.1. Instead of the information required by subparagraphs (b) and (c) of paragraph S5.1.1 a manufacturer may use the statements, "See camper certification label for month and year of manufacture" and "This camper conforms to all applicable Federal Motor Vehicle Safety Standards in effect on the date of manufacture". If water, bottled gas, or refrigerator (icebox) has been omitted from this statement, the manufacturer's information shall note such omission and advise that the weight of any such item when added to the camper, should be added to the maximum camper weight figure used in selecting an appropriate truck. (38 F.R. 4399—February 14, 1973. Effective: 2/14/73)]

(b) A list of other additional or optional equipment that the camper is designed to carry, and the maximum weight of each if its weight is more than 20 lbs. when installed.

(c) [The statement: "To estimate the total cargo load that will be placed on a truck, add the weight of all passengers in the camper, the weight of supplies, tools, and all other cargo, the weight or installed additional or optional camper equipment, and the manufacturer's camper weight figure. Select a truck that has a cargo weight rating that is equal to or greater than the total cargo load of the camper, and whose manufacturer recommends a cargo center of gravity zone that will contain the camper's center of gravity when it is installed". Until October 1, 1973 the phrase "total load" may be used instead of "total cargo load". (38 F.R. 4399—February 14, 1973. Effective: 2/14/73)]

(d) The statements: "When loading this camper store heavy gear first, keeping it on or close to the camper floor. Place heavy things far enough forward to keep the loaded camper's center of gravity within the zone recommended by the truck manufacturer. Store only light objects on high shelves. Distribute weight to obtain even side-to-side balance of the loaded vehicle. Secure loose items to prevent weight shifts that could affect the balance of your vehicle. When the truck-camper is loaded, drive to a scale and weigh on the front and on the rear

wheels separately to determine axle loads. The load on an axle should not exceed its gross axle weight rating (GAWR). The total of the axle loads should not exceed the gross vehicle weight rating (GVWR). These weight ratings are given on the vehicle certification label that is located on the left side of the vehicle, normally the dash panel, hinge pillar, door latch post, or door edge next to the driver on trucks manufactured on or after January 1, 1972. If weight ratings are exceeded, move or remove items to bring all weights below the ratings.”

(e) [A picture showing the location of the longitudinal center of gravity of the camper within an accuracy of 2 inches under the loaded

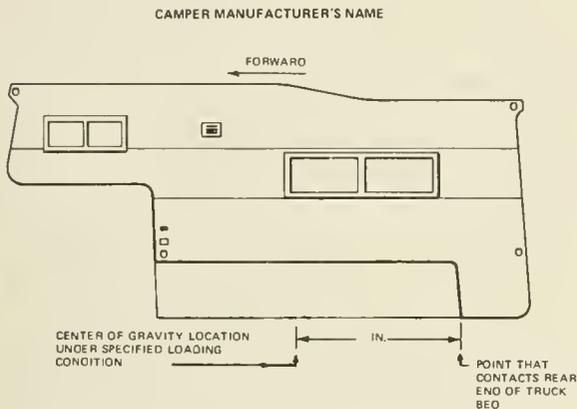


FIGURE 2 - CAMPER CENTER OF GRAVITY INFORMATION

condition specified in paragraph S5.1.1(d), in the manner illustrated in Figure 2. Until October 1, 1973 the phrase “Mount at Aft End of Truck Cargo Area” may be used in Figure 2

instead of “Point That Contacts Rear End of Truck Bed”. (38 F.R. 4399—February 14, 1973. Effective: 2/14/73) ]

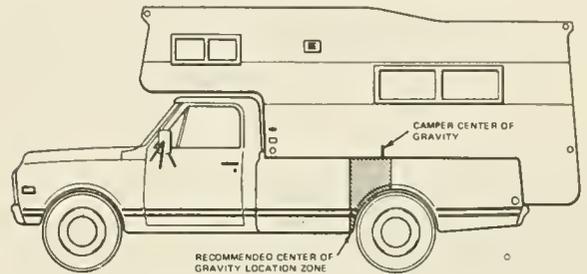


FIGURE 3 - EXAMPLE OF PROPER TRUCK AND CAMPER MATCH

(f) A picture showing the proper match of a truck and slide-in camper in the form illustrated in Figure 3.

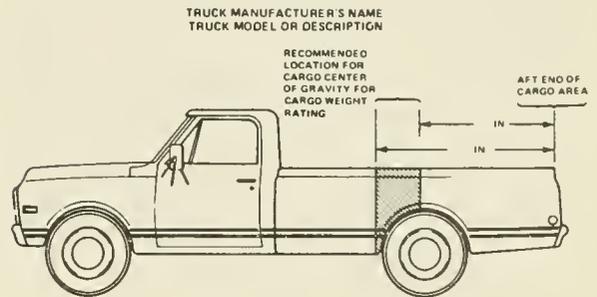


FIGURE 4 - TRUCK LOADING INFORMATION

37 F.R. 16497  
August 15, 1972



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO.201

### Occupant Protection In Interior Impact—Passenger Cars

(Docket No. 19)

Motor Vehicle Safety Standard No. 201, issued January 31, 1967, and published in the *Federal Register*, February 3, 1967 (32 F.R. 2413), specifies requirements for instrument panels, seat backs, protrusions, sun visors, and armrests to afford impact protection for occupants of passenger cars manufactured after January 1, 1968.

Parties adversely affected by the Standard were permitted to petition for reconsideration on or before March 6, 1967, pursuant to 23 CFR 215.17. By order dated March 29, 1967, the Acting Under Secretary of Commerce for Transportation consolidated the 27 petitions related to Standard No. 201 and ordered that a hearing on reconsiderations be held.

On April 21, 1967, the Federal Highway Administration issued an order directing that a rule-making hearing be held pursuant to 5 U.S.C. 553 (formerly sec. 4 of the Administrative Procedure Act (60 Stat. 238, 5 U.S.C. 1003)). The hearing was held May 22 and 23, 1967, at Detroit, Mich., and May 24 and 25, 1967, at Washington, D.C. On June 22, 1967, the presiding officer submitted his Report of Recommended Findings to the Federal Highway Administration.

On June 8 and 9, 1967, and July 6 and 7, 1967, meetings were held by the National Highway Safety Bureau with domestic and foreign auto industry engineers in which detailed engineering discussions of all problems of compliance with the Standard were held.

After review of the evidence presented at the hearings ordered by the Federal Highway Administration, the report of the presiding officer,

and the Bureau's analysis of the engineering meetings with the industry, I have determined that Standard 201 issued January 31, 1967, should be superseded by a new Standard that specifies initial requirements to afford impact protection for occupants, and that certain related definitions should be amended accordingly.

Good cause is shown that an effective date earlier than 180 days after issuance is in the public interest and notice and public procedure hereon are unnecessary since these amendments relieve restrictions and impose no additional burden on any person.

In consideration of the foregoing, Part 371, Initial Federal Motor Vehicle Safety Standards, is amended by superseding § 371.21, Motor Vehicle Safety Standard No. 201 (32 F.R. 2413), with a new Motor Vehicle Safety Standard No. 201 . . . and by amending § 371.3(b) . . .

These amendments are made under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority of March 31, 1967 (32 F.R. 5606), as amended April 6, 1967 (32 F.R. 6495), and becomes effective January 1, 1968.

Issued in Washington, D.C., on August 11, 1967.

Lowell K. Bridwell,  
Federal Highway Administrator

32 F.R. 11776  
August 16, 1967



## MOTOR VEHICLE SAFETY STANDARD NO. 201

### Occupant Protection in Interior Impact—Passenger Cars

**S1. Purpose and scope.** This standard specifies requirements to afford impact protection for occupants.

**S2. Application.** This standard applies to passenger cars.

#### **S3. Requirements.**

**S3.1 Instrument panels.** Except as provided in S3.1.1, when that area of the instrument panel that is within the head impact area is impacted in accordance with S3.1.2 by a 15 pound, 6.5 inch diameter head form at a relative velocity of 15 miles per hour, the deceleration of the head form shall not exceed 80g continuously for more than 3 milliseconds.

**S3.1.1** The requirements of S3.1 do not apply to—

- (a) Console assemblies;
- (b) Areas less than 5 inches inboard from the juncture of the instrument panel attachment to the body side inner structure;
- (c) Areas closer to the windshield juncture than those statically contactable by the head form with the windshield in place;
- (d) Areas outboard of any point of tangency on the instrument panel of a 6.5 inch diameter head form tangent to and inboard of a vertical longitudinal plane tangent to the inboard edge of the steering wheel; or
- (e) Areas below any point at which a vertical line is tangent to the rearmost surface of the panel.

**S3.1.2 Demonstration procedures.** Tests shall be performed as described in Society of Automotive Engineers Recommended Practice J921, "Instrument Panel Laboratory Impact Test Procedure," June 1965, using the specified instrumentation or instrumentation that meets the performance requirements specified in Society of Automotive Engineers Recommended Practice J977, "Instrumentation for Laboratory Impact Tests," November 1966, except that—

(a) The origin of the line tangent to the instrument panel surface shall be a point on a transverse horizontal line through a point 5 inches horizontally forward of the seating reference point of the front outboard passenger designated seating position, displaced vertically an amount equal to the rise which results from a 5 inch forward adjustment of the seat or 0.75 inches; and

(b) Direction of impact shall be either—

- (1) In a vertical plane parallel to the vehicle longitudinal axis; or
- (2) In a plane normal to the surface at the point of contact.

**S3.2 Seat Backs.** Except as provided in S3.2.1, when that area of the seat back that is within the head impact area is impacted in accordance with S3.2.2 by a 15 pound, 6.5 inch diameter head form at a relative velocity of 15 miles per hour, the deceleration of the head form shall not exceed 80g continuously for more than 3 milliseconds.

**S3.2.1** The requirements of S3.2 do not apply to rearmost, side-facing, back-to-back, folding auxiliary jump, and temporary seats.

**S3.2.2 Demonstration procedures.** Tests shall be performed as described in Society of Automotive Engineers Recommended Practice J921, "Instrument Panel Laboratory Impact Test Procedure," June 1965, using the specified instrumentation or instrumentation that meets the performance requirements specified in Society of Automotive Engineers Recommended Practice J977, "Instrumentation for Laboratory Impact Tests," November 1966, except that—

(a) The origin of the line tangent to the uppermost seat back frame component shall be a point on a transverse horizontal line through the seating reference point of the right rear designated seating position, with adjustable forward seats in their rearmost design driving position

and reclinable forward seat backs in their nominal design driving position;

(b) The direction of impact shall be either—

(1) In a vertical plane parallel to the vehicle longitudinal axis; or

(2) In a plane normal to the surface at the point of contact;

(c) For seats without head restraints installed, tests shall be performed for each individual split or bucket seats back at points within 4.0 inches left and right of its centerline, and for each bench seat back between points 4.0 inches outboard of the centerline of each outboard designated seating position;

(d) For seats having head restraints installed, each test shall be conducted with the head restraint in place at its lowest adjusted position, at a point on the head restraint centerline; and

(e) For a seat that is installed in more than one body style, tests conducted at the fore and aft extremes identified by application of subparagraph (a) shall be deemed to have demonstrated all intermediate conditions.

**S3.3 Interior compartment doors.** Each interior compartment door assembly located in an instrument panel, console assembly, seat back, or side panel adjacent to a designated seating position shall remain closed when tested in accordance with either S3.3.1(a) and S3.3.1(b) or S3.3.1(a) and S3.3.1(c). Additionally, any interior compartment door located in an instrument panel or seat back shall remain closed when the instrument panel or seat back is tested in accordance with S3.1 and S3.2. All interior compartment door assemblies with a locking device must be tested with the locking device in an unlocked position.

**S3.3.1 Demonstration procedures.**

(a) Subject the interior compartment door latch system to an inertia load of 10g in a horizontal transverse direction and an inertia load of 10g in a vertical direction in accordance with the procedure described in section 5 of SAE Recommended Practice J839b, "Passenger Car Side Door Latch Systems," May 1965, or an approved equivalent.

[(b) Impact the vehicle perpendicularly into a fixed collision barrier at a forward longitudinal velocity of 30 miles per hour. (35 F.R. 11242 July 14, 1970. Effective: 9-1-70).]

(c) Subject the interior compartment door latch system to a horizontal inertia load of 30g in a longitudinal direction in accordance with the procedure described in section 5 of SAE Recommended Practice J839b, "Passenger Car Side Door Latch Systems," May 1965, or an approved equivalent.

**S3.4 Sun visors.**

**S3.4.1** Two sun visors shall be provided that are constructed of or covered with energy-absorbing materials.

**S3.4.2** Each sun visor mounting shall present no rigid material edge radius of less than 0.125 inch that is statically contactable by a spherical 6.5 inch diameter head form.

**S3.5 Armrests.**

**S3.5.1 General.** Each installed armrest shall conform to at least one of the following:

(a) It shall be constructed with energy-absorbing material and shall deflect or collapse laterally at least 2 inches without permitting contact with any underlying rigid material.

(b) It shall be constructed with energy-absorbing material that deflects or collapses to within 1.25 inches of a rigid test panel surface without permitting contact with any rigid material. Any rigid material between 0.5 and 1.25 inches from the panel surface shall have a minimum vertical height of not less than 1 inch.

(c) Along not less than 2 continuous inches of its length, the armrest shall, when measured vertically in side elevation, provide at least 2 inches of coverage within the pelvic impact area.

**S3.5.2 Folding armrests.** Each armrest that folds into the seat back or between two seat backs shall either—

(a) Meet the requirement of S3.5.1; or

(b) Be constructed of or covered with energy-absorbing material.

33 F.R. 15794  
October 25, 1968

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 202

### Head Restraints—Passenger Cars

(Docket No. 8)

A proposal to amend § 371.21 of Part 371, Federal Motor Vehicle Safety Standards, by adding a new standard, Head Restraints—Passenger Cars; was published in the *Federal Register* on December 28, 1967 (32 F.R. 20865).

Interested persons have been afforded an opportunity to participate in the making of the amendment.

Several comments requested that the use of a 50th percentile adult male manikin be permitted in demonstrating compliance with the Standard. The Administration feels that a 50th percentile manikin is not representative of a large enough percentage of the public, but recognizes that certain modifications to a 50th percentile manikin may result in a suitable test device. Therefore, the Standard has been modified to permit use of an approved equivalent test device.

A comment from an equipment manufacturer and an equipment manufacturers' association asserted that the Standard should not require that motor vehicle manufacturers provide head restraints at the time of vehicle manufacture, but that each customer should be free to equip his vehicle with head restraints of his own choice, maintaining that the installation of head restraints is a relatively simple matter and that there appears to be virtually no technological advantage in requiring factory installation. The Administration has determined that safety dictates that head restraints be provided on all passenger cars manufactured on or after January 1, 1969, and that a head restraint standard that merely specified performance requirements for head restraint equipment would not insure that all passenger cars would be so equipped, and would not, therefore, meet the need for safety. Furthermore, the Administration has determined that the performance of a head restraint is de-

pendent upon the strength of the structure of the seat to which it is attached, as well as the compatibility of the head restraint with its anchorage to the seat structure.

Some of the comments expressed concern that the proposed Standard would exclude the use of head restraints that are integral with the seat back. The Administration did not intend to imply that "add-on" head restraint devices are the only available means of providing appropriate levels of protection. Such protection may be achieved by the use of a restraint system that is integral with the seat back.

Some comments noted that when testing head restraints that are adjustable to a height of more than 27.5 inches above the seating reference point, the load would not be applied to the appropriate portion of the head restraint. To provide the necessary flexibility, the Standard has been modified to specify that the point of load application and the point of width measurement be determined relative to the top of the head restraint rather than the seating reference point.

Some comments stated that the 8g performance requirement would be incomplete without the inclusion of a time duration requirement. The Administration has concluded that a minimum time duration of 80 milliseconds is appropriate and the Standard has been so modified.

Some comments requested that the location of the head restraint relative to the torso line be measured without a load being applied to the head restraint. The Administration feels that this measurement would be unrealistic and, therefore, the Standard requires that the measurement be taken during the application of the 132-pound initial load.

Many comments requested a more precise description of the method to be used in locating

the test device's reference line and torso reference line. Therefore, the Standard has been modified to provide the necessary clarification.

Some comments claimed that lead time would be a problem; however, the Administration believes that the need to protect the public from neck injury outweighs the possible lead time problems.

Several comments requested clarification of the term "approved representation of a human articulated neck structure." "Approved" is defined in § 371.3(b) as "approved by the Secretary." The Secretary would approve the neck structure of a test device if it could be demonstrated by technical test data that the articulation of the neck structure represented that of a human neck. Approval could only be given to a structure sufficiently described in performance parameters to ensure reliable and reproducible test data.

In consideration of the foregoing, § 371.21 of Part 371, Federal Motor Vehicle Safety Standards, is amended by adding Standard No. 202... Effective January 1, 1969.

(Secs. 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966; 15 U.S.C. 1392, 1407; and the delegation of authority of Mar. 31, 1967, 32 F.R. 5606; as amended Apr. 6, 1967, 32 F.R. 6495; July 27, 1967, 32 F.R. 11276; Oct. 11, 1967, 32 F.R. 14277; Nov. 8, 1967, 32 F.R. 15710, and Feb. 8, 1968)

Issued in Washington, D.C., on February 12, 1968.

Lowell K. Bridwell,  
Federal Highway Administrator

33 F.R. 2945  
February 14, 1968

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 202

### Head Restraints—Passenger Cars

(Docket No. 8)

Motor Vehicle Safety Standard No. 202, issued February 12, 1968, and published in the *Federal Register* February 14, 1968 (33 F.R. 2945), specifies requirements for head restraints to reduce the frequency and severity of neck injury in rear-end and other collisions to occupants of passenger cars manufactured after January 1, 1969.

Pursuant to 23 CFR 216.35 (32 F.R. 15818), interested persons could petition the Federal Highway Administrator for reconsideration on or before March 15, 1968.

Several petitioners questioned the 80 millisecond duration requirement of the 8g dynamic test on the grounds that it imposes a more severe load on the seat back than is required in Motor Vehicle Safety Standard No. 207, Anchorage of Seats—Passenger Cars. The Administrator has determined that the demonstration procedure should be revised to incorporate a half-sine wave acceleration pulse shape with an amplitude of 8g and a base (duration) of 80 milliseconds. This revised loading is closer to actual crash conditions, and is more consistent with existing seat strength requirements. The demonstration procedure has been revised to include the half-sine wave pulse shape.

Several petitioners questioned the method for establishing the displaced torso line for the static test on the grounds that it did not take into account the compression of the seat back cushion by the torso under load. The Administrator has determined that the Standard should be revised to take into account seat back cushion compression in establishing the displaced torso line, and the demonstration procedure has been revised accordingly.

One petitioner questioned the procedure outlined for establishing the dummy reference line for the dynamic test. The procedure made use of the torso line of the 95th percentile dummy or test device and there is no commonly accepted definition of this torso line. The Administrator has revised the procedure for establishing dummy torso reference lines to make use of the SAE two-dimensional manikin, with its torso line established in accordance with SAE Aerospace—Automotive Drawing Standards.

One petitioner questioned the requirement that a spherical head form be used to apply the static load because tests have shown that this head form tends to slip under the foundation structure of the head restraint, thus showing an unrealistic loss of load. The Administrator has revised the demonstration procedure to include a cylindrical head form as an alternative.

One petitioner requested that the static load requirement of 200 pounds for head restraints adjusted to a height of 27.5 inches be changed to an equivalent moment about the seating reference point. This would permit the manufacturer who has a head restraint which adjusts higher than 27.5 inches to subject his head restraint to less than a 200 pound static load. This petition is denied. The Administrator has determined that the 200 pound static load should remain in the Standard to ensure that all head restraints sustain this load to meet the needs of safety.

Since this amendment provides clarification, relieves a restriction, and imposes no additional burden, notice and public procedure are unnecessary.

In consideration of the foregoing, § 371.21 of Part 371, Federal Motor Vehicle Safety Standard No. 202, which becomes effective January 1, 1969,

Effective: January 1, 1969

is amended by revising sections 5.1 and 5.2 (relating to the demonstration procedures). . . .

(Secs. 103, 119, National Traffic and Motor Safety Act of 1966 (15 U.S.C. 1392, 1407); delegation of authority of March 31, 1967 (32 F.R. 5606), as amended April 11, 1968 (33 F.R. 5803))

Issued in Washington, D.C., on April 11, 1968.

Lowell K. Bridwell,  
Federal Highway Administrator

**33 F.R. 5793**  
**April 16, 1968**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 202****Head Restraints—Passenger Cars****(Docket No. 8)**

Motor Vehicle Safety Standard No. 202 (33 F.R. 2945), as amended (33 F.R. 5793), specifies requirements for head restraints to reduce the frequency and severity of neck injury in rear-end and other collisions to occupants of passenger cars manufactured after January 1, 1969.

Paragraph S4(b)(2) of the Standard provides that a head restraint qualifying under the static procedure shall have a lateral width of 10 inches for use with bench-type seats and 6.75 inches for use with individual type seats when measured 2.5 inches below the top of the head restraint.

One manufacturer has petitioned the Administrator for reconsideration of the method by which the lateral width of the head restraint is to be measured. The petitioner requests that the Standard be revised to permit the width to be measured either 2.5 inches below the top of the head restraint or 25 inches above the seating reference point.

Measurement of width 2.5 inches below the top of the head restraint may present possible difficulties for manufacturers of vehicles with head restraints which are integrated into the seat back. These manufacturers may elect to exceed the minimum required height of 27.5 inches to accommodate tall occupants and taper the top portion of the head restraint to provide minimum visibility restriction. In this case, the head restraint, when measured 2.5 inches below the top, might meet the minimum width requirement.

The Administrator has determined that the procedure for measuring head restraint lateral width should be revised since it is in the public interest to encourage the additional protection offered by seat backs higher than the minimum height requirement of this Standard. Accordingly, the Standard is being amended to permit

measurement of head restraint width either 2.5 inches below the top of the head restraint or 25 inches above the seating reference point.

Paragraph S5.1(c) of the Standard provides that the magnitude of the acceleration curve for the dynamic test shall not be less than that of a half-sine wave having the amplitude of 8g and a duration of 80 milliseconds not more than 20% above the half-sine wave.

One manufacturer has requested an interpretation of the term "not more than 20% above the half-sine wave."

It is necessary that a test tolerance be allowed because of equipment variances. However, the tolerance must be properly limited to prevent very severe accelerations which might fail the seat back without properly testing the head restraint. The intent of the "20%" limitation was to establish a half-sine wave upper limit curve having an amplitude of 9.6g and a duration of 96 milliseconds.

Accordingly, the Standard is being amended to require that the magnitude of the acceleration curve be not more than that of a half-sine wave curve having an amplitude of 9.6g and a duration of 96 milliseconds. In addition, the equation for the lower limit curve is being deleted since it imposes an unnecessary restriction on the lateral location of the curve. By removing the equation, the limit curves can then be moved laterally with respect to each other to allow for normal test variances.

Since these amendments provide clarification and an alternate means of compliance, relieve restrictions, and impose no additional burden, I find that for good cause shown notice and public procedure are unnecessary, and that an effective

Effective: January 1, 1969

date for these amendments of less than 180 days is in the public interest.

In consideration of the foregoing, Section 371.21 of Part 371, Federal Motor Vehicle Safety Standard No. 202, as amended, is further amended effective January 1, 1969. . . .

These amendments are made under the authority of Sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority contained in Section 1.4(c) of Part 1 of the Regu-

lations of the Office of the Secretary of Transportation (49 CFR 1.4(c)).

Issued in Washington, D.C., on October 3, 1968.

Lowell K. Bridwell,  
Federal Highway Administrator

**33 F.R. 15065**  
**October 9, 1968**

## MOTOR VEHICLE SAFETY STANDARD NO. 202

### Head Restraints—Passenger Cars

**S1. Purpose and Scope.** This standard specifies requirements for head restraints to reduce the frequency and severity of neck injury in rear-end and other collisions.

**S2. Application.** This standard applies to passenger cars.

**S3. Definitions.** "Head restraint" means a device that limits rearward angular displacement of the occupant's head relative to his torso line.

**S4. Requirements.** A head restraint that conforms to either (a) or (b) shall be provided at each outboard front designated seating position—

(a) It shall, when tested in accordance with S5.1, during a forward acceleration of at least 8g on the seat supporting structure, limit rearward angular displacement of the head reference line to 45° from the torso reference line; or

(b) It shall, when adjusted to its fully extended design position, conform to each of the following—

(1) When measured parallel to torso line, the top of the head restraint shall not be less than 27.5 inches above the seating reference point;

[(2) When measured either 2.5 inches below the top of the head restraint, or 25 inches above the seating reference point, the lateral width of the head restraint shall be not less than—

(i) 10 inches for use with bench-type seats; and

(ii) 6.75 inches for use with individual seats; (33 F.R. 15066—Oct. 9, 1968)]

(3) When tested in accordance with S5.2, the rearmost portion of the head form shall not be displaced to more than 4 inches perpendicularly rearward of the displaced extended torso reference line during the application of the load specified in S5.2(e); and

(4) When tested in accordance with S5.2, the head restraint shall withstand an increasing load until one of the following occurs—

- (i) Failure of the seat or seat back; or
- (ii) Application of a load of 200 pounds.

### S5. Demonstration Procedures.

**S5.1** [Compliance with S.4(a) shall be demonstrated in accordance with the following with the head restraint in its fully extended design position:

(a) On the exterior profile of the head and torso of a dummy having the weight and seated height of a 95th percentile adult male with an approved representation of a human, articulated neck structure, or an approved equivalent test device, establish reference lines by the following method:

(1) Position the dummy's back on a horizontal flat surface with the lumbar joint in a straight line.

(2) Rotate the head of the dummy rearward until the back of the head contacts the same horizontal surface in (1).

(3) Position the SAE J-826 two-dimensional manikin's back against the flat surface in (1), alongside the dummy with the h-point of the manikin aligned with the h-point of the dummy.

(4) Establish the torso line of the manikin as defined in SAE Aerospace-Automotive Drawing Standards, Sec. 2.3.6, P. E1.01, September 1963.

(5) Establish the dummy torso reference line by superimposing the torso line of the manikin on the torso of the dummy.

(6) Establish the head reference line by extending the dummy torso reference line onto the head.

(b) At each designated seating position having a head restraint, place the dummy, snugly restrained by a Type 1 seat belt, in the manufacturer's recommended design seated position.

(33 F.R. 5793—April 16, 1968)】

【(c) During a forward acceleration applied to the structure supporting the seat as described below, measure the maximum rearward angular displacement between the dummy torso reference line and the head reference line. When graphically depicted, the magnitude of the acceleration curve shall not be less than that of a half-sine wave having the amplitude of 8g and a duration of 80 milliseconds and not more than that of a half-sine wave curve having an amplitude of 9.6g and a duration of 96 milliseconds. (33 F.R. 15066—Oct. 9, 1968)】

【S5.2 Compliance with § 4.(b) shall be demonstrated in accordance with the following with the head restraint in its fully extended design position:

(a) Place a test device, having the back pan dimensions and torso line, (centerline of the head room probe in full back position) of the

three dimensional SAE J-826 manikin, at the manufacturer's recommended design seated position.

(b) Establish the displaced torso reference line by applying a rearward moment of 3300 in. lb. about the seating reference point to the seat back through the test device back pan located in (a).

(c) After removing the back pan, using a 6.5 inch diameter spherical head form or a cylindrical head form having a 6.5 inch diameter in plain view and a 6-inch height in profile view, apply, perpendicular to the displaced torso reference line, a rearward initial load 2.5 inches below the top of the head restraint that will produce a 3300 in. lb. moment about the seating reference point.

(d) Gradually increase this initial load to 200 lbs. or until the seat or seat back fails, whichever occurs first. (33 F.R. 5793—April 16, 1968)】

33 F.R. 15065  
October 9, 1968

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 203

### Impact Protection from the Steering Control System

(Docket No. 74-33; Notice 2)

This notice amends Standard No. 203, *Impact protection from the steering control system*, 49 CFR § 571.203, to exclude from its requirements some passenger cars which meet the frontal barrier crash requirements of Standard No. 208, *Occupant crash protection*, 49 CFR § 571.208.

The NHTSA proposed this exclusion of vehicles from the requirements of Standard No. 203 at the request of General Motors, to permit development of an air cushion restraint system at the driver's position as a means of meeting the frontal barrier crash protection requirements (S5.1) of Standard No. 208 (39 F.R. 34062, September 23, 1974). General Motors sought the exclusion because its modification to the steering control system to incorporate the air cushion system and accept higher loads exerted during a crash makes conformity of the column with Standard No. 203 difficult and sometimes impossible.

Comments were received from General Motors Corporation and Volvo of America Corporation, in support of the proposal. Renault, Inc., Peugeot, Inc., and Mercedes-Benz of North America, Inc., supported the proposal and suggested that the exception be extended to passive restraint systems that incorporate seat belts. These comments argue that the use of passive belts will be high and that the protection offered by Standard No. 203 would in nearly all cases be redundant to that of Standard No. 208.

As a general matter, the NHTSA has maintained that the redundant occupant crash protection offered by standards (e.g., Standard No. 212, *Windshield retention*) is justified for those situations where the primary occupant crash protection system fails, or multiple collisions occur.

Redundant protection is particularly justified in the case of passive seat belts because of the greater likelihood that seat belt protection will be rendered inoperative by an occupant than will crash-deployed protection.

In this case, the NHTSA has made the limited determination that the redundant protection offered by Standard No. 203 is not justified where it directly interferes with development of a more advanced, convenient, and effective restraint system. In contrast, it is obvious that passive systems which utilize belt assemblies do not require modifications of steering control systems and there is, therefore, no reason to sacrifice the redundant protection. These petitions to expand the scope of the proposed exception are accordingly denied.

American Motors Corporation has suggested that an exception not be granted in this case until future requirements of Standard No. 208 are established, and that General Motors' developmental work be undertaken on the basis of a temporary exemption under 49 CFR Part 555. This approach has not been adopted by the NHTSA. In light of the financial commitments that might be involved, this agency has concluded that General Motors is entitled to the assurance that their developments on advanced Standard No. 208 systems will not be barred by Standard No. 203 in the future.

In consideration of the foregoing, paragraph S3 (application) in Standard No. 203 (49 CFR § 571.203) is amended. . . .

*Effective date:* [30 days following date of publication of the amendment in the *Federal Register*]. Because this amendment relieves a restriction, it is found for good cause shown that

Effective: May 27, 1975

an effective date sooner than 180 days from the date of its publication in the *Federal Register* is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on April 17, 1975.

James B. Gregory  
Administrator

40 F.R. 17992  
April 24, 1975

**MOTOR VEHICLE SAFETY STANDARD NO. 203****Impact Protection for the Driver from the Steering Control System—Passenger Cars**

**S1. Purpose and scope.** This standard specifies requirements for steering control systems that will minimize chest, neck, and facial injuries to the driver as a result of impact.

**S2. Application.** [This standard applies to passenger cars. However it does not apply to vehicles that conform to the frontal barrier crash requirements (S5.1) of Standard No. 208 (§ 571.208) by means other than seat belt assemblies. (40 F.R. 17992—April 24, 1975. Effective: 5/27/75)]

**S3. Definitions.** "Steering control system" means the basic steering mechanism and its associated trim hardware, including any portion of a steering column assembly that provides energy absorption upon impact.

**S4. Requirements.**

**S4.1** Except as provided in S4.2, when the steering control system is impacted by a body block in accordance with Society of Automotive Engineers Recommended Practice J944, "Steering Wheel Assembly Laboratory Test Procedure," December 1965 or an approved equivalent,

at a relative velocity of 15 miles per hour, the impact force developed on the chest of the body block transmitted to the steering control system shall not exceed 2,500 pounds.

**S4.2** A Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed for the driver of any vehicle with forward control configuration that does not meet the requirements of S4.1.

**S4.3** The steering control system shall be so constructed that no components or attachments, including horn actuating mechanisms and trim hardware, can catch the driver's clothing or jewelry during normal driving maneuvers.

**[Interpretation**

The term "Jewelry" in paragraph S4.3 refers to watches, rings, and bracelets without loosely attached or dangling members. (32 F.R. 3390—March 1, 1967)]

**32 F.R. 2414  
February 3, 1967**



**MOTOR VEHICLE SAFETY STANDARD NO. 204****Steering Control Rearward Displacement—Passenger Cars**

**S1. Purpose and scope.** This standard specifies requirements limiting the rearward displacement of the steering control into the passenger compartment to reduce the likelihood of chest, neck, or head injury.

**S2. Application.** This standard applies to passenger cars.

**S3. Definitions.**

“Steering column” means a structural housing that surrounds a steering shaft.

“Steering shaft” means a component that transmits steering torque from the steering wheel to the steering gear.

**S4. Requirements.**

**S4.1** Except as provided in S4.2, the upper end of the steering column and shaft shall not be displaced horizontally rearward parallel to the longitudinal axis of the vehicle relative to an undisturbed point on the vehicle more than 5 inches, determined by dynamic measurement, in a barrier collision test at 30 miles per hour minimum conducted in accordance with Society of Automotive Engineers Recommended Practice J850, “Barrier Collision Tests,” February 1963.

**S4.2** A Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed for the driver of any vehicle with forward control configuration that does not meet the requirements of S4.1.

**[Interpretations**

(1) When conducting the barrier collision test, a driver dummy may be used without measuring the impact force developed on the chest.

(2) In the event that the vehicle impacts the barrier at a velocity not less than 30 miles per hour nor more than 33 miles per hour, the displacement of the steering column may be corrected to 30 miles per hour by means of the following formula:

$$\frac{D_1}{D_2} = \frac{V_1^2}{V_2^2}$$

(32 F.R. 8808—June 21, 1967) ]

**32 F.R. 2414**  
**February 3, 1967**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 205**  
**Glazing Materials—Passenger Cars, Multipurpose Vehicles, Motorcycles, Trucks, and**  
**Buses**  
**(Docket No. 9)**

Motor Vehicle Safety Standard No. 205 (32 F.R. 2414) as amended (32 F.R. 10072) specifies requirements for glazing materials for use in passenger cars, multipurpose passenger vehicles, motorcycles, trucks, and buses.

As a result of inquiries seeking clarification of the applicability of the Federal motor vehicle safety standards to campers, a ruling was published in the *Federal Register* on March 26, 1968 (FHWA Ruling 68-1) (33 F.R. 5020) which specified that the glazing standard is applicable to slide-in campers because they are items of motor vehicle equipment for use in motor vehicles and to chassis-mount campers.

The glazing standard requires that glazing materials "conform to the United States of America Standards Institute 'American Standard Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways,' ASA Standard Z26.1-1966." As a result, windshields and forward facing windows are required to be AS1 laminated glass.

The Federal Highway Administration has received petitions for rule making requesting that forward facing windows on campers be allowed to use AS2 or AS3 laminated glass which is able to meet the Z26.1-1966 penetration resistance test, No. 26, required of AS1 type glass. The requests point out that AS1 type glass which is presently required for forward facing windows in campers is unduly expensive and unnecessary for campers because AS1 type glass must meet stringent optical tests. The petitioners argue that forward facing windows on campers should not have to meet these stringent optical tests because the windows are not used for driver visibility.

The Administrator has determined that granting the petitions would not reduce the protection

afforded the public by the standard. Accordingly the glazing standard is being amended to allow AS2 or AS3 laminated glass in forward facing windows of campers if the glass is able to meet the penetration resistance test. The amendment will require that forward facing windows in campers conform to AS1 type laminated safety glass; or AS2 type laminated safety glass that meets Test 26 of Z26.1-1966; or AS3 type laminated safety glass that meets the requirements of Test 26 of Z26.1-1966. The latter two glazing materials will be identified by the characters AS2-26 and AS3-26 respectively.

The Federal Highway Administration has received a petition for rule making requesting that Standard No. 205 be amended so that paragraph S3.2 Edges be changed to provide that exposed edges must meet the Society of Automotive Engineers Recommended Practice J673a, Automotive Glazing, August 1967, instead of the SAE Recommended Practice J673, Automotive Glazing, June 1960. The petition also requests that the words "except that the minimum edge radius dimension shall not be less than the nominal thickness of the glazing material" be deleted because this requirement is already included in the SAE Recommended Practice J673a. These requests would allow minor imperfections in edging that would not diminish the safety benefits derived from the requirements but would allow normal manufacturing tolerances. These requests are granted and Standard No. 205 is being amended accordingly.

The Administrator has received a petition concerning certification requirements for prime manufacturers of glazing materials; prime glazing material manufacturers being those who fabricate, laminate or temper glazing materials.

The Petitioner states that he has encountered practical problems in the use of certification labels because: (a) glass stored for appreciable lengths of time, covered by the label, may "weather" in a different manner from the remaining areas of the glass (b) labels on individual lights of glass can produce pressure points due to local area loading and may result in breakage during shipment and storage, and (c) certification labels can become separated from the material prior to delivery from consigned stock distributors to non-stocking distributors.

The Petitioner points out that Standard No. 205 requires marking of safety glazing materials in accordance with paragraph 6 of the United States of America Standards Institute (USASI) Standard Z26.1-1966. The Petitioner requests that the permanent marking on the glazing material required by Standard No. 205, with the addition of the symbol "DOT", be allowed as an alternative method of certification required under Section 114 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 USC 1401). This petition is granted provided that the symbol "DOT" and an approved two digit manufacturer's code number is included in the permanent marking. Any prime glazing material manufacturer may apply for an approved two digit

manufacturer's code number assignment to the Director, National Highway Safety Bureau, Washington, D.C. 20591.

Since these amendments relieve restrictions, provide alternative means of compliance and create no additional burden the Administrator finds, for good cause shown, that it is in the public interest to make them effective upon date of issuance.

In consideration of the foregoing, Section 371.21 of Part 371, Federal Motor Vehicle Safety Standard No. 205 (32 F.R. 2414) as amended (32 F.R. 10072) is amended. . . .

These amendments are made under the authority of Sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 USC 1392, 1407) and the delegation of authority contained in section 1.4(c) of Part I of the Regulations of the Office of the Secretary (49 CFR 1.4(c)).

Issued in Washington, D.C., on September 13, 1968.

John R. Jamieson, Deputy  
Federal Highway Administrator

**33 F.R. 14162**  
**September 19, 1968**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 205

### Glazing Materials

(Docket No. 23; Notice 2)

Motor Vehicle Safety Standard No. 205 specifies requirements for glazing materials for use in passenger cars, multipurpose passenger vehicles, motorcycles, trucks, and buses.

As a result of inquiries seeking clarification of the applicability of the Federal motor vehicle safety standards to campers, a ruling was published in the *Federal Register* on March 26, 1968 (33 F.R. 5020), which specified that the glazing standard (No. 205) is applicable to slide-in campers because they are items of motor vehicle equipment for use in motor vehicles.

Standard No. 205 requires, among other things, that glazing materials "conform to the United States of America Standards Institute 'American Standard Safety Code of Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways,' ASA Standard Z26.1-1966" (hereafter Z26.1-1966).

By order published in the *Federal Register* on September 19, 1968 (33 F.R. 14162), section S3.2 of the Standard was amended to allow the use of AS2 or AS3 laminated glass in forward facing windows of campers provided such glass met the requirements of Test 26 of Z26.1-1966. On the assumption that Z26.1-1966, as incorporated in Standard No. 205, required the use of AS1 type laminated glass in forward facing windows of campers, the Administrator found that this amendment relieved restrictions, provided alternate means of compliance and created no additional burdens. Accordingly, the amendment was made effective immediately.

Thereafter, petitions for reconsideration were filed on the grounds, among others, that properly interpreted Z26.1-1966 permitted the use of AS1, AS2, AS3, AS4, and AS5 glazing material in forward facing camper windows and that, there-

fore, the September amendment did not relax an existing requirement but in fact imposed additional restrictions upon manufacturers by limiting the types of glazing materials allowable for use in such windows. Consequently, it is urged that notice of that amendment should have been given and interested parties afforded an opportunity to comment.

The Administrator recognizes that, prior to the issuance of the September amendment, Standard No. 205 as initially promulgated could have been reasonably interpreted as allowing the use of AS1, AS2, AS3, AS4, and AS5 glazing materials in the forward facing windows of campers, that many manufacturers could have reasonably acted in reliance upon such a reading, that a great deal of confusion concerning the requirements has and continues to exist and that, in fact, comments focusing directly upon the proper glazing materials required in forward facing windows of campers have not been specifically solicited by the Administration. In the light of all of these circumstances it is considered appropriate to revoke section S3.2—"Materials for use in forward facing windows of campers" of Federal Motor Vehicle Safety Standard No. 205, as amended (33 F.R. 14162), as well as any interpretation that would have required the use of AS1 glass only in forward facing camper windows. The net effect of this action is to permit, subject to further rulemaking action,<sup>1</sup> the use of glazing materials that petitioners represent are presently being used, i.e., AS1, AS2, AS3, AS4, and AS5 glazing materials referred to in Z26.1-1966.

Since this amendment relieves restrictions and creates no additional burden the Administrator finds good cause is shown that an effective date earlier than 180 days after issuance in the

Effective: March 1, 1969

public interest and the amendment is made effective upon date of issuance.

In consideration of the foregoing, § 371.21 of Part 371, Federal Motor Vehicle Safety Standard No. 205 as amended (33 F.R. 14162) is amended by revoking S3.2—"Materials for use in forward facing windows of campers".

(Secs. 103, 119, National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407); delegation of authority contained in

§ 1.4(c) of Part 1 of the regulations of the Office of the Secretary (49 CFR 1.4(c))

Issued: February 27, 1969.

John R. Jamieson, Deputy  
Federal Highway Administrator

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<sup>1</sup>See notice of proposed rule making published at 34 F.R. 3699, which proposes glazing requirements for forward facing windows of campers.

**34 F.R. 3688**  
**March 1, 1969**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 205

### Glazing Materials

(Docket No. 71-1; Notice 3)

The purpose of this notice is to amend Motor Vehicle Safety Standard No. 205, "Glazing Materials," to permit the use of certain plastic materials in motor vehicles in addition to those presently allowed; to modify the certification and labeling requirements; and to modify the test for the chemical resistance of plastic materials. It also clarifies the applicability of the standard to motor vehicle equipment, and the provisions of the standard dealing with readily removable windows.

Federal Motor Vehicle Safety Standard No. 205 was initially published February 3, 1967 (32 F.R. 2414), and amended July 8, 1967 (32 F.R. 10072), September 19, 1968 (33 F.R. 14162), and March 1, 1969 (34 F.R. 3688). On January 9, 1971, a notice of proposed rulemaking (Docket 71-1, Notice 1) was published based upon petitions for rulemaking received from the Eastman Chemical Products, Inc., and the California Highway Patrol. The former requested that the standard be amended to allow the use of butyrate plastic materials, and the latter requested changes in the requirements of the standard dealing with the marking of glazing materials. This amendment responds to both of these petitions and also modifies the standard as a result of independent agency action.

Standard No. 205 is applicable to "glazing materials for use in passenger cars, multipurpose passenger vehicles, trucks, buses and motorcycles." It is also applicable, under FHWA Ruling 68-1 (33 F.R. 5020, March 26, 1968), to glazing for use in slide-in and chassis-mount campers. This amendment to Standard No. 205 incorporates the substance of FHWA Ruling 68-1 into the applicability section of the standard and specifies, in accordance with the notice of March 1, 1969 (Docket 23; Notice 2, 34 F.R. 3688) the glazing

materials that are permitted to be used in these equipment items.

The notice of January 9, 1971, proposed to revise the incorporation by reference of American Standards Association Test (ASA) Z26.1-1966 to include supplement Z26.1a-1969, March 7, 1969, and to reflect the change in the name of the American Standards Association to the American National Standards Institute. No objections were raised in the comments to these proposals, and they are incorporated into the standard by this amendment.

The notice proposed to modify the chemical resistance tests incorporated into the standard (Tests 19 and 20), by deleting carbon tetrachloride as a testing agent and by adding trichloroethylene. The tests are designed to test the resistance of plastic materials to chemicals that are commonly used to clean them. By this notice, carbon tetrachloride is deleted from the list of materials. As indicated in the notice of proposed rulemaking, the deletion is commensurate with the ban imposed by the Food and Drug Administration on this substance because of its high toxicity. At the same time, the NHTSA has decided not to include either trichloroethylene or freon in the list of testing agents. The comments have indicated that these substances are not commonly used as cleaning agents, and accordingly they are not used for test purposes.

The major revision proposed by the notice, based upon a petition for rulemaking from the Eastman Chemical Products Co., Inc., was to allow additional plastic materials to be used in motor vehicles. The petitioner claimed that the requested materials would meet any test to which other plastic materials are subjected, except for resistance to undiluted denatured alcohol (For-

mula SD 30), where a slight tackiness would occur. Rather than merely exempt these plastics from the alcohol resistance requirement, the notice suggested that they still be subjected to the same chemicals as other plastics, but that if structural integrity were maintained, a loss of transparency would be allowed. The notice for the same reason proposed not to subject these materials to the abrasion and weathering tests applied to other plastics. Instead, the proposal would have required labels to be affixed to the material specifying cleaning agents and instructions that would minimize loss of transparency, and would have restricted them to locations in motor vehicles where loss of transparency would not affect driver visibility.

Based upon information received during the rulemaking process, the NHTSA has determined that the materials in question exhibit characteristics which make them satisfactory from the standpoint of safety for use in certain motor vehicle applications. Many comments, however, opposed the approach taken by NHTSA in the proposed rule, and as a result the proposed requirements have been changed. The standard as now amended will provide that these materials not be required to show resistance to undiluted denatured alcohol if (1) they show resistance to the other chemicals presently specified as testing agents, (2) they can meet the other tests to which other plastic materials are subjected, and (3) they are used in only limited locations in the motor vehicle. In addition, they must be labeled, as proposed, with instructions regarding cleaning that will minimize a loss of transparency.

Some comments also objected to certain locations where the additional plastic materials would have been allowed to be used: specifically, auxiliary wind deflectors and folding doors. The comments suggested that transparency is an important characteristic for glazing used in these locations, and that materials not resistant to Formula SD 30 alcohol should not be used in them. The NHTSA has determined that these comments have merit, and has not permitted these materials to be used in the two locations.

The notice of proposed rulemaking would have required all interior mirrors, both rearview and vanity-type, to be constructed of glazing ma-

terials that meet the requirements of ANS Z26. As a result of comments received, the NHTSA has determined that the requirements should not be applied to interior mirrors. With regard to rearview mirrors, many are today constructed of annealed glass of a wedge shape, in the form of day/night mirrors. The comments have indicated that materials allowed to be used pursuant to ANS Z26 do not make satisfactory day/night mirrors. As these mirrors have clear safety advantages when used in night driving conditions, the NHTSA has determined that their elimination would not be in the best interests of safety. With reference to other vehicle interior mirrors, while the use of safety glazing in them is preferable, there is presently a lack of data which shows a compelling need for changing current industry practices. This is especially important where, as here, much of the equipment involved is not peculiarly adapted to motor vehicle usage. One particular type of mirror, a sun-visor mirror, falls within the purview of Motor Vehicle Safety Standard No. 201, "Occupant Protection in Interior Impact," and will be dealt with as part of that standard.

The notice of proposed rulemaking prescribed a scheme for the marking and certification of glazing materials which would have required prime glazing manufacturers to certify glazing materials by applying to the glazing material the symbol DOT and an appropriate code mark, together with the marking required by section 6 of ANS Z26. The proposal would have also required these markings to be in a specified format and in a specific location of the completed glazing. Other than primary manufacturers would have been required to certify the material by affixing the mark of the primary manufacturer.

As amended Standard No. 205 will require prime manufacturers to certify glazing material, as proposed, by adding to the markings required by section 6 of ANS Z26 the symbol DOT and a code mark obtained on application to the NHTSA. Those who as manufacturers or distributors cut glazing for use in motor vehicles from larger sheets are required to certify conformity to the standard in any way they choose, as long as the method chosen is consistent with Section 114 of the National Traffic and Motor

Vehicle Safety Act. One such method would be to affix a label to the completed piece of glazing containing a statement to the effect that the material conforms to Standard No. 205. The proposed requirement that such manufacturers label the material with the marking of the prime manufacturer has been deleted, as is the proposed requirement that would have required the markings to appear in a specified order, or in specific locations on the glazing material.

An issue arose during the period that this rulemaking was under consideration concerning the use of plastics in side windows of buses. General Motors has requested an interpretation of Standard No. 205 that would include within the definition of "readily-removable windows" emergency escape windows which can be pushed out, except for one side which is hinged to the window frame, without the use of any special tools. The NHTSA has concluded that the term "readily removable windows" includes windows of this design, and in this amendment so clarifies Standard No. 205.

*Effective dates:* The addition of glazing materials to those already allowed imposes no additional burdens on any person, and relieves restrictions on the types of glazing materials

which can be used. That part of the amendment pertaining to the addition of these materials, paragraphs S5.1.1.2, S5.1.1.3, and S5.1.2, is effective upon publication of this notice in the *Federal Register*. Similarly, both the deletion of the test for chemical resistance of plastics to carbon tetrachloride in paragraph S5.1.1.1, and the clarification of "readily-removable windows" in S5.1.1.4 relieve restrictions, and the effective date of those amendments is the date of publication of this notice. The other amendments to the standard are effective April 1, 1973.

In light of the above, Motor Vehicle Safety Standard No. 205, appearing at 49 CFR section 571.205, is revised. . . .

This notice is issued pursuant to the authority of sections 103, 114, and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1403, 1407) and the delegation of authority at 49 CFR 1.51.

Issued on June 14, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 12237**  
**June 21, 1972**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 205

### Glazing Materials

(Docket 71-1; Notice 4)

This notice responds to petitions for reconsideration of an amendment published June 21, 1972 (37 F.R. 12237), to Motor Vehicle Safety Standard No. 205, "Glazing Materials" (49 CFR § 571.205). Petitions were received from the Recreational Vehicle Institute (RVI) and the California Highway Patrol. To the extent that this notice does not grant the requests of the petitioners, they are hereby denied.

In the amendment of June 21, the NHTSA changed the application section of the standard, based on FHWA Ruling 68-1 (33 F.R. 5020, March 26, 1968) to expressly include glazing for use in all campers, and defined campers to include both slide-in or "pickup" campers (including a related item, pickup covers) and chassis-mount campers (campers mounted directly onto truck chassis). The 1968 ruling held that Standard No. 205 applied to glazing for use in slide-in campers, and that glazing for use in chassis-mount campers came within the standard when the camper was ultimately attached to a chassis, as the standard applied expressly to the glazing of the completed vehicle, a multipurpose passenger vehicle. The petitioner objects to this amendment on the basis that the recreational vehicle industry has distinguished between the two camper types, and has considered the latter a motor home (a multipurpose passenger vehicle under Standard No. 205), and the former an item of motor vehicle equipment. It requests in its petition that this earlier distinction be retained in the standard.

The NHTSA has determined that the petition of RVI in this regard should be granted, and the applicability section of the standard is amended to refer specifically both to glazing for use in "slide-in campers", as that term is defined in

Motor Vehicle Safety Standard No. 126, Truck-Camper Loading, (49 CFR 571.126), and to glazing for use in pickup covers. Chassis-mount campers are included in a newly defined category of multipurpose passenger vehicle, "motor home", and glazing for use in them is subject to the standard insofar as they are incorporated into completed vehicles.

The RVI petition also requested that the requirements of the standard for glazing for use in multipurpose passenger vehicles (including chassis-mount campers and other motor homes) be clarified, suggesting that the requirements be made identical to those for passenger car glazing, with an exception in the case of motor homes for locations other than windshields, and windows directly to the right and left of the driver. It further requested that forward-facing windows of motor homes be considered to be "openings in the roof" under ANS Z.26. The NHTSA has previously, as a matter of interpretation, taken the position that is embodied in this amendment, that for the purposes of Standard No. 205 glazing for use in multipurpose passenger vehicles is subject to the requirements for glazing for use in trucks. This is based on the definition of multipurpose passenger vehicle in section 571.3: "A motor vehicle with motive power, except a trailer, designed to carry 10 persons or less, which is constructed either on a truck chassis or with special features for occasional off-road operation". The agency has decided to adhere to this position.

An exception is hereby adopted for motor home windows other than windshields, forward-facing windows, and windows directly to the right and left of the driver. Manufacturers may use in these other locations any type of glazing

allowed by the standard to be used in motor vehicles. This is the position previously adopted for slide-in campers, which have a purpose and use similar to motor homes. The effect of this provision is to allow the use in motor homes, except for windshields, forward-facing windows, and windows to the immediate right and left of the driver, of any item authorized for use in motor vehicles by Standard No. 205. Windshields and windows to the immediate right and left of the driver must conform to the requirements applicable to trucks for those locations. Forward-facing windows may be manufactured of any item authorized for use by the Standard except item 6 (AS 6), item 7 (AS 7), and item 13 (AS 13) flexible plastics.

The California Highway Patrol has petitioned for reconsideration of that part of the amendment which seemed to delete a requirement that persons who cut glazing material must place on the cut material the prime manufacturer's marking. Section 6 of ANS Z26 requires sections of glazing cut from pieces bearing the markings required by that section to be identically marked. The June 21 notice did not delete this provision. It deleted that part of the proposed requirements specifying that persons who cut glazing materials include the DOT symbol and the prime manufacturer's code number. The language of the preamble (p. 12238, col. 3) was intended to reflect only that fact. This amendment clarifies those requirements to make it clear that persons who cut glazing must include the markings re-

quired by section 6 of ANS Z26 on each cut piece. The amendment also provides that the prime manufacturer's DOT symbol and code number are to be affixed only to glazing items made by the prime manufacturer as components for specific vehicles, and not on sheets to be cut into components by other persons.

The marking provisions are further amended to specify that the new items of glazing material authorized by the amendment of June 21 be identified for purposes of marking by the marks "AS 12" and "AS 13". The use of these marks does not indicate approval by the American National Standards Institute, but is specified for the purpose of consistency with existing marking requirements.

In light of the above, Motor Vehicle Safety Standard No. 205, Glazing Materials, appearing at 49 CFR § 571.205, is amended . . .

*Effective date:* The effective date of April 1, 1973, is retained.

This notice is issued under the authority of Section 103, 114, and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1392, 1403, 1407) and the delegation of authority at 49 CFR 1.51.

Issued on November 8, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 24035**  
**November 11, 1972**

## MOTOR VEHICLE SAFETY STANDARD NO. 205

### Glazing Materials

**51. Scope.** This standard specifies requirements for glazing materials for use in motor vehicles and motor vehicle equipment.

**52. Purpose.** The purpose of this standard is to reduce injuries resulting from impact to glazing surfaces, to ensure a necessary degree of transparency in motor vehicle windows for driver visibility, and to minimize the possibility of occupants being thrown through the vehicle windows in collisions.

**53. Application.** [This standard applies to glazing materials for use in passenger cars, multipurpose passenger vehicles, trucks, buses, motorcycles, slide-in campers, and pickup covers designed to carry persons while in motion. (37 F.R. 24035—November 11, 1972. Effective: 11/11/72)]

#### 54. Definitions.

["Camper" means a structure designed to be mounted in the cargo area of a truck, or attached to an incomplete vehicle with motive power, for the purpose of providing shelter for persons.

"Motor home" means a multipurpose passenger vehicle that provides living accommodations for persons.

"Pickup cover" means a camper having a roof and sides but without a floor, designed to be mounted on and removable from the cargo area of a truck by the user.

"Slide-in camper" means a camper having a roof, floor, and sides, designed to be mounted on and removable from the cargo area of a truck by the user. (37 F.R. 24035—November 11, 1972. Effective: 11/11/72)]

#### 55. Requirements.

##### 55.1 Materials.

**55.1.1** Glazing materials for use in motor vehicles, except as otherwise provided in this standard, shall conform to the American National

Standard "Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways," Z26.1—1966, July 15, 1966, as supplemented by Z26.1a—1969, March 7, 1969 (hereinafter referred to as "ANS Z26").

**55.1.1.1** The chemicals specified for testing chemical resistance in Tests Nos. 19 and 20 of ANS Z26 shall be:

- (a) One percent solution of nonabrasive soap.
- (b) Kerosene.
- (c) Undiluted denatured alcohol, Formula SD No. 30 (1 part 100-percent methyl alcohol in 10 parts 190-proof ethyl alcohol by volume).
- (d) Commercial motor car gasoline.

(Effective: 6/21/72)

**55.1.1.2** The following locations are added to the lists specified in ANS Z26 in which item 4, item 5, item 8, and item 9 safety glazing may be used:

[(j) Windows and doors in motor homes, except for the windshield and windows to the immediate right or left of the driver.

(k) Windows and doors in slide-in campers and pickup covers. (37 F.R. 24035—November 11, 1972. Effective: 11/11/72)]

**55.1.1.3** The following locations are added to the lists specified in ANS Z26 in which item 6 and item 7 safety glazing may be used:

[(j) Windows and doors in motor homes, except for the windshield, forward-facing windows, and windows to the immediate right or left of the driver.

(k) Windows, except forward-facing windows, and doors in slide-in campers and pickup covers. (37 F.R. 24035—November 11, 1972. Effective: 11/11/72)]

**55.1.1.4** The phrase "readily removable windows" as defined in ANS Z26, for the purposes of

this standard, in buses having a GVWR of more than 10,000 pounds, shall include pushout windows and windows mounted in emergency exits that can be manually pushed out of their location in the vehicle without the use of tools, regardless of whether such windows remain hinged at one side to the vehicle. (Effective: 6/21/72)

**[55.1.1.5 Multipurpose Passenger Vehicles.**

Except as otherwise specifically provided by this standard, glazing for use in multipurpose passenger vehicles shall conform to the requirements for glazing for use in trucks as specified in ANS Z26. (37 F.R. 24035—November 11, 1972. Effective: 11/11/72)]

**55.1.2** In addition to the glazing materials specified in ANS Z26, materials conforming to S5.1.2.1 or S5.1.2.2 may be used in the locations of motor vehicles specified in those sections. (Effective: 6/21/72)

**55.1.2.1 Item 12—Rigid plastics.** Safety plastic materials that comply with Tests Nos. 10, 13, 16, 17, 21, and 24 of ANS Z26, Tests Nos. 19 and 20 of ANS Z26 with the exception of the test for resistance to undiluted denatured alcohol Formula SD No. 30, and the labeling requirements of S5.1.2.3, may be used in a motor vehicle only in the following specific location at levels not requisite for driving visibility.

**[(a)** Windows and doors in slide-in campers and pickup covers. (37 F.R. 24035—November 11, 1972. Effective: 11/11/72)]

(b) Motorcycle windscreens below the intersection of a horizontal plane 15 inches vertically above the lowest seating position.

(c) Standee windows in buses.

(d) Interior partitions.

(e) Openings in the roof.

(f) Flexible curtains or readily removable windows or in ventilators used in conjunction with readily removable windows.

**[(g)** Windows and doors in motor homes, except for the windshield and windows to the immediate right or left of the driver. (37 F.R. 24035—November 11, 1972. Effective: 11/11/72)]

**55.1.2.2 Item 13—Flexible plastics.** Safety plastic materials that comply with Tests Nos. 16, 22, and 23 or 24 of ANS Z26, Tests Nos. 19 and

20 of ANS Z26 with the exception of the test for resistance to undiluted denatured alcohol Formula SD No. 30, and the labeling requirements of S5.1.2.3, may be used in a motor vehicle only in the following specific locations at levels not requisite for driving visibility.

**[(a)** Windows, except forward-facing windows, and doors in slide-in campers and pickup covers. (37 F.R. 24035—November 11, 1972. Effective: 11/11/72)]

(b) Motorcycle windscreens below the intersection of a horizontal plane 15 inches vertically above the lowest seating position.

(c) Standee windows in buses.

(d) Interior partitions.

(e) Openings in the roof.

(f) Flexible curtains or readily removable windows or in ventilators used in conjunction with readily removable windows.

**[(g)** Windows and doors in motor homes, except for the windshield, forward-facing windows, and windows to the immediate right or left of the driver. (37 F.R. 24035—November 11, 1972. Effective: 11/11/72)]

**55.1.2.3 Cleaning instructions.** Each manufacturer of glazing materials designed to meet the requirements of S5.1.2.1 or S5.1.2.2 shall affix a label, removable by hand, to each item of such glazing material. The label shall specify instructions and agents for cleaning the materials that will minimize the loss of transparency.

**55.2 Edges.** In vehicles except school buses, exposed edges shall be treated in accordance with SAE Recommended Practice J673a, "Automotive Glazing", August 1967. In school buses, exposed edges shall be banded.

**56. Certification and marking.**

**[56.1** Each prime glazing material manufacturer, except as specified below, shall mark glazing materials manufactured by him in accordance with section 6 of ANS Z26. The materials specified in S5.1.2.1 and S5.1.2.2 shall be identified by the marks "AS 12" and "AS 13" respectively. A prime glazing material manufacturer is one who fabricates, laminates, or tempers the glazing material.

**56.2** Each prime glazing material manufacturer shall certify each piece of glazing material

to which this standard applies that is designed as a component of any specific motor vehicle or camper, pursuant to section 114 of the National Traffic and Motor Vehicle Safety Act of 1966, by adding to the mark required by S6.1 in letters and numerals of the size specified in section 6 of ANS Z26, the symbol "DOT" and a manufacturer's code mark, which will be assigned by the NHTSA on the written request of the manufacturer.

**S6.3** Each prime glazing material manufacturer shall certify each piece of glazing material to which this standard applies that is designed to be cut into components for use in motor vehicles or items of motor vehicle equipment, pursuant to section 114 of the National Traffic and Motor Vehicle Safety Act.

**S6.4** Each manufacturer or distributor who cuts a section of glazing material to which this standard applies, for use in a motor vehicle or camper, shall mark that material in accordance with section 6 of ANS Z26.

**S6.5** Each manufacturer or distributor who cuts a section of glazing material to which this standard applies, for use in a motor vehicle or camper, shall certify that his product complies with this standard in accordance with section 114 of the National Traffic and Motor Vehicle Safety Act. (37 F.R. 24035—November 11, 1972. Effective: 4/1/73)】

**37 F.R. 12237**  
**June 21, 1972**



## PREAMBLE TO FEDERAL MOTOR VEHICLE SAFETY STANDARD NO. 206

### Door Lock and Door Retention Components—Passenger Cars, Multipurpose Passenger Vehicles, and Trucks

(Docket No. 2-16)

A proposal to further amend Federal Motor Vehicle Safety Standard No. 206, extending its applicability to multipurpose passenger vehicles and trucks, was published in the *Federal Register* on December 28, 1967 (32 F.R. 20868).

Interested persons have been afforded an opportunity to participate in the making of this amendment. Their comments and other available information have been carefully considered.

Ejection from passenger cars and trucks, upon impact, has proven to be a primary cause of occupant injury and death. Standard No. 206 was issued to minimize the likelihood of occupants being thrown from passenger cars by providing, among other things, load requirements for door latches and door hinge systems. A study conducted by the Cornell Aeronautical Laboratory disclosed that the rate of occupant ejection from trucks is almost twice that of recent-model passenger cars. Moreover, the study revealed that the rate of severe and fatal injuries among truck drivers who have been thrown from vehicles is four times that of drivers who remained in the vehicle after impact. Extending the requirements of Standard 206 to trucks and multipurpose passenger vehicles clearly meets the need for motor vehicle safety. This conclusion is concurred in generally by the commenters.

Several changes have been made in the text of the standard from that which appeared in the Notice of Proposed Rule Making. The title of the standard has been changed to more accurately describe the items dealt with in the standard. In addition, in response to some of the comments submitted, the category of side doors previously referred to as "hinged doors" has been divided

into two new groups—"hinged cargo-type doors" and "hinged doors except cargo-type doors," and separate load requirements and demonstration procedures have been prescribed for each. In light of other comments submitted, the demonstration procedure for "sliding doors" has also been changed for reasons of practicability. Further, a definition of the term "cargo-type doors" has been inserted in the standard. The term "temporary doors" referred to and defined in the notice has been deleted. Finally, several other changes have been made for clarification purposes only.

No multipurpose passenger vehicle manufacturer objected to the proposed effective date of this amendment, January 1, 1970. On the other hand, one heavy truck manufacturer specifically objected to the proposed effective date on the ground that additional lead time would be needed to redesign, test, and retool, in order to comply with the amended standard. Several other truck manufacturers also considered the lead time to be insufficient. A January 1, 1972 effective date for trucks was proposed by the aforesaid heavy truck manufacturer. The Administrator concludes that there is merit to his objection. Heavy truck manufacturers will require more time than was originally anticipated to take the steps necessary to comply with the standard. Accordingly, the effective date of this amendment, insofar as trucks are concerned, is extended to January 1, 1972.

In consideration of the foregoing, Federal Motor Vehicle Safety Standard No. 206, as amended, 49 C.F.R. § 371.21, is amended to read as set forth below, effective January 1, 1970, for passenger cars and multipurpose passenger vehicles, and January 1, 1972, for trucks.

Effective: January 1, 1970  
January 1, 1972

This rule-making action is taken under authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority contained in Part I of the Regulations of the Office of the Secretary of Transportation (49 CFR 1.4(c)).

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Issued on January 17, 1969.

Lowell K. Bridwell,  
Federal Highway Administrator

**34 F.R. 1150**  
**January 24, 1969**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 206**  
**Door Locks and Door Retention Components—Passenger Cars, Multipurpose Passenger**  
**Vehicles and Trucks**  
**(Docket No. 2-16)**

Federal Motor Vehicle Safety Standard No. 206 (49 CFR 371.21), as amended (34 F.R. 1151), specifies strength requirements for door locks and door retention components on passenger cars, multipurpose passenger vehicles, and trucks.

Paragraph S4. of Standard 206 exempts components of detachable doors for vehicles manufactured for use without doors from the requirements of the standard. This was done because such doors are provided not for the purpose of retaining the driver and passengers in case of collision but only as protection from inclement weather.

One manufacturer has noted that strength requirements are equally inapplicable to components of folding and roll-up doors and has petitioned for an amendment which would treat such doors in the same manner as detachable doors. It has been determined that the petition has merit. Accordingly, the standard is amended to remove folding and roll-up doors from the requirements of the standard.

In consideration of the foregoing, paragraph S4. of Federal Motor Vehicle Safety Standard No. 206 is amended to read as follows:

**S4. Requirements.** Side door components referred to herein shall conform to this standard if any portion of a 90-percentile two-dimensional

manikin as described in SAE Practice J826, when positioned at any seating reference point, projects into the door opening area on the side elevation or profile view. Components on folding doors, roll-up doors and doors that are designed to be easily attached to or removed from motor vehicles manufactured for operation without doors need not conform to this standard.

\* \* \* \* \*

*Correction:* The paragraph title "S5.2.3 "Sliding Doors" of Federal Motor Vehicle Safety Standard No. 206 is changed to read "S5.3 Sliding Doors".

Since this amendment relaxes a requirement and imposes no additional burden on any person, notice and opportunity to comment thereon are unnecessary, and it becomes effective on publication in the *Federal Register*. This notice of amendment is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority from the Secretary of Transportation to the Federal Highway Administrator, 49 CFR 1.4(c).

Issued on August 14, 1969.

F. C. Turner  
Federal Highway Administrator



## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO 206

### Door Locks and Retention Components

(Docket No. 71-5; Notice 2)

The purpose of this notice is to amend Standard No. 206, Door Locks and Door Retention Components, to require that all side doors leading into a passenger compartment containing one or more seating accommodations meet the requirements of the standard, regardless of seat location or whether the seats are within the definition of designated seating positions. This notice also amends the standard to make clear the distinction between front and rear doors.

I. A notice of proposed rulemaking proposing the extension of the requirements of the standard to all side doors leading into passenger compartments was published in the Federal Register on February 3, 1971 (36 F.R. 1913). The three comments which were received in response to the notice were carefully considered. All of them supported the proposed amendment. The amendment in this notice is identical to the proposed amendment except for the effective date. That date has been changed to September 1, 1972 to permit adequate time for compliance.

II. The standard specifies in S4.1.3 different door lock requirements for front and rear doors. The Standard does not, however, precisely differentiate between these two types of doors. The problem of determining whether a door is to be treated as a front door or rear door arises particularly in connection with multipurpose passenger vehicles having a single right side door.

To clarify the application of the requirements of S4.1.3, this notice amends the Standard by adding the word "Side" to the titles of S4.1.3.1 and S4.1.3.2 and by adding definitions of "Side front door" and "Side rear door" to S3. The definitions adopt, as the reference point for differentiating between front and rear doors, the

rearmost point on the driver's seatback, when the driver's seat is adjusted to its most vertical and rearward position. A door with 50 percent or more of its opening area in a side view forward of that point is a "side front door". A door with more than 50 percent of its opening area in a side view to the rear of that point is a "side rear door".

These amendments to Standard No. 206 are clarifying and interpretive in nature. Consequently, it is found that notice and opportunity to comment are unnecessary and that, for good cause shown, an effective date earlier than 30 days after issuance is in the public interest.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 206, § 571.206 of title 49, Code of Federal Regulations, is amended . . .

Effective dates: Amendment 1. concerning the application of the standard is effective September 1, 1972. Amendment 2. through 4. concerning the distinction between front and rear doors are effective January 8, 1972.

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1392, 1407) and the delegation of authority at 49 CFR 1.51.

Issued on January 4, 1972.

Douglas W. Toms  
Administrator

37 F.R. 284  
January 8, 1972



## MOTOR VEHICLE SAFETY STANDARD NO. 206

### Door Locks and Door Retention Components—Passenger Cars, Multipurpose Passenger Vehicles, and Trucks

**51. Purpose and scope.** This standard specifies requirements for side door locks and side door retention components including latches, hinges, and other supporting means, to minimize the likelihood of occupants being thrown from the vehicle as a result of impact.

**52. Application.** This standard applies to passenger cars, multipurpose passenger vehicles, and trucks.

**53. Definitions.** "Cargo-Type Door" means a door designed primarily to accommodate cargo loading including, but not limited to, a two-part door that latches to itself.

["Side front door" means a door that in a side view, has 50 percent or more of its opening area forward of the rearmost point on the driver's seatback, when the driver's seat is adjusted to its most vertical and rearward position.

"Side rear door" means a door that, in a side view, has more than 50 percent of its opening area to the rear of the rearmost point on the driver's seatback, when the driver's seat is adjusted to its most vertical and rearward position. (37 F.R. 284—January 8, 1972. Effective: 1/8/72)]

**54. Requirements.** [Components on any side door leading directly into a compartment that contains one or more seating accommodations shall conform to this standard. However, components on folding doors, roll-up doors and doors that are designed to be easily attached to or removed from motor vehicles manufactured for operation without doors need not conform to this standard. (37 F.R. 284—January 8, 1972. Effective: 9/1/72)]

#### 54.1 Hinged Doors, Except Cargo-Type Doors.

**54.1.1 Door Latches.** Each door latch and striker assembly shall be provided with two positions consisting of—

- (a) A fully latched position; and
- (b) A secondary latched position.

**54.1.1.1 Longitudinal Load.** The door latch and striker assembly, when in the fully latched position, shall not separate when a longitudinal load of 2,500 pounds is applied. When in the secondary latched position, the door latch and striker assembly shall not separate when a longitudinal load of 1,000 pounds is applied.

**54.1.1.2 Transverse Load.** The door latch and striker assembly, when in the fully latched position, shall not separate when a transverse load of 2,000 pounds is applied. When in the secondary latched position, the door latch and striker assembly shall not separate when a transverse load of 1,000 pounds is applied.

**54.1.1.3 Inertia Load.** The door latch shall not disengage from the fully latched position when a longitudinal or transverse inertia load of 30g is applied to the door latch system (including the latch and its actuating mechanism with the locking mechanism disengaged).

**54.1.2 Door Hinges.** Each door hinge system shall support the door and shall not separate when a longitudinal load of 2,500 pounds is applied. Similarly, each door hinge system shall not separate when a transverse load of 2,000 pounds is applied.

**54.1.3 Door Locks.** Each door shall be equipped with a locking mechanism with an operating means in the interior of the vehicle.

**S4.1.3.1 Side Front Door Locks.** When the locking mechanism is engaged, the outside door handle or other outside latch release control shall be inoperative.

**S4.1.3.2 Side Rear Door Locks.** In passenger cars and multipurpose passenger vehicles, when the locking mechanism is engaged, both the outside and inside door handles or other latch release controls shall be inoperative.

## **S4.2 Hinged Cargo-Type Doors.**

### **S4.2.1 Door Latches.**

**S4.2.1.1 Longitudinal Load.** Each latch system, when in the latched position, shall not separate when a longitudinal load of 2,500 pounds is applied.

**S4.2.1.2 Transverse Load.** Each latch system, when in the latched position, shall not separate when a transverse load of 2,000 pounds is applied. When more than one latch system is used on a single door, the load requirement may be divided among the total number of latch systems.

**S4.2.2 Door Hinges.** Each door hinge system shall support the door and shall not separate when a longitudinal load of 2,500 pounds is applied, and when a transverse load of 2,000 pounds is applied.

**S4.3 Sliding Doors.** The track and slide combination or other supporting means for each sliding door shall not separate when a total transverse load of 4,000 pounds is applied, with the door in the closed position.

## **S5. Demonstration Procedures.**

### **S5.1 Hinged Doors, Except Cargo-Type Doors.**

#### **S5.1.1 Door Latches.**

**S5.1.1.1 Longitudinal and Transverse Loads.** Compliance with paragraphs S4.1.1.1 and S4.1.1.2 shall be demonstrated in accordance with paragraph 4 of Society of Automotive Engineers

Recommended Practice J839b, "Passenger Car Side Door Latch Systems," May 1965.

**S5.1.1.2 Inertia Load.** Compliance with S4.1.1.3 shall be demonstrated by approved tests or in accordance with paragraph 5 of SAE Recommended Practice J839b, May 1965.

**S5.1.2 Door Hinges.** Compliance with S4.1.2 shall be demonstrated in accordance with paragraph 4 of SAE Recommended Practice J934, "Vehicle Passenger Door Hinge Systems," July 1965. For piano-type hinges, the hinge spacing requirements of SAE J934 shall not be applicable and arrangement of the test fixture shall be altered as required so that the test load will be applied to the complete hinge.

### **S5.2 Hinged Cargo-Type Doors.**

**S5.2.1 Door Latches.** Compliance with S4.2.1 shall be demonstrated in accordance with paragraphs 4.1 and 4.3 of SAE Recommended Practice J839b, "Passenger Car Side Door Latch Systems," May 1965. An equivalent static test fixture may be substituted for that shown in Figure 2 of SAE J839b, if required.

**S5.2.2 Door Hinges.** Compliance with S4.2.2 shall be demonstrated in accordance with paragraph 4 of SAE Recommended Practice J934, "Vehicle Passenger Door Hinge Systems," July 1965. For piano-type hinges, the hinge spacing requirement of SAE J934 shall not be applicable and arrangement of the test fixture shall be altered as required so that the test load will be applied to the complete hinge.

**S5.3 Sliding Doors.** Compliance with S4.3 shall be demonstrated by applying an outward transverse load of 2,000 pounds to the load bearing members at the opposite edges of the door (4,000 pounds total). The demonstration may be performed either in the vehicle or with the door retention components in a bench test fixture.

34 F.R. 1150

January 24, 1969

## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD 207

### Seating Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses (Docket No. 2-12; Notice No. 3)

The purpose of this amendment to Motor Vehicle Safety Standard No. 207 is to extend its application to multipurpose passenger vehicles, trucks and buses, to require a seat to remain in its adjusted position during load application, and to clarify and restructure the standard.

A notice of proposed rulemaking on the subject of amending Motor Vehicle Safety Standard No. 207, and extending it to multipurpose passenger vehicles, trucks and buses was published on September 20, 1969 (34 F.R. 14661).

The need for adequately anchored seating is clear. A seat that tears loose on impact adds to the hazards that are inherent in crash situations. Each seat must remain in place if it is to afford any protection to its occupant. Standard No. 207 accordingly established strength requirements for the anchorage of occupant seats, required that a means be provided for keeping folding seats and seat backs in place, and prescribed strength requirements for seat backs and seat back restraints. The proposal to extend the standard's application to additional types of vehicles is part of an overall effort to afford occupants of these vehicles protection equal to that now available to occupants of passenger cars. The extension of Standard No. 207 is closely allied with the extension of standards for seat belt installation (208) and anchorages (210) to these other vehicle types.

Most of the comments favored the extended application of the standard. Some persons who objected voiced the fear that the seat system requirements would eliminate some seating configurations in multipurpose passenger vehicles and walk-in van-type trucks. Although manufacturers of these vehicles may have to make

design changes, it has been determined that strength and convenience in this case are not incompatible, and that the provision of adequate seats is not impracticable for such vehicles. It should also be noted that if a seat is not intended for use while the vehicle is in motion, and therefore provides no designated seating position under the amended definition of that term in section 571.3 of Title 49 CFR, the requirements of this standard do not apply to it.

Several respondents observed that the requirements of S4.2 that a seat sustain the required force "in each position to which it can be adjusted" would impose a substantial burden on power seats, whose "positions" may be very numerous. The intent of the paragraph is to insure that a seat would be able to sustain the specified force in any position that is usable in actual operations, although the manufacturer may choose to test it only in its most vulnerable positions. Thus, the manufacturer may use whatever means are at his disposal to meet the minimum requirements; the standards are not intended to dictate either the nature or the quantity of manufacturer testing. The requirement has been reworded slightly and language has been added to make it clear that the force specified by subparagraph (d) is applied to the seat only in the rearmost position.

The requirement that the seat withstand the load without leaving its adjusted position has been retained, but in response to another group of comments it has been decided to allow non-locking suspension type seats to travel normally during application of the loads required by S4.2. Any other method of testing would not accurately reflect the actual performance characteristics of such seats.

Several comments questioned the utility of requiring a seat back restraint release to be readily accessible if its use is not required for normal exit from the vehicles. There appears to be merit to this argument with respect to the need for rear seat occupants to use the release and the paragraph has been altered accordingly.

One comment stated that subparagraph S4.3.2.1 of the proposal should be amended to require the restraint on a rearward-facing seat to withstand a rearward load equal to eight times the weight of the pivoting or folding portion of the seat. This suggestion has merit, and the subparagraph has been amended by the addition of a new subparagraph dealing expressly with rearward-facing seats.

Several comments requested that addition of language permitting "approved physical demonstrations" or "approved dynamic tests" in place of the static loading requirements in S4.2 and S4.3. For several reasons, that language has not been added to the amended Standard No. 207. The Bureau adheres to the procedures specified in the standard in its own testing, and it is therefore essential that the procedures be set forth with precision. However, if a manufacturer develops test procedures which are equal to those in the standard, in the sense that the results can

be accurately correlated with the standard's requirements, nothing in the Act or in the standard prevents him from using his tests to determine that his product conforms to the standard. The Bureau wishes to encourage new developments in the field of testing, and does not intend that the amended standard should inhibit them.

The proposal has been further changed by incorporating the substance of the test procedures in SAE J879b into the text of the standard and by adopting the accompanying drawings as figures 1-5 of the standard.

Effective date: January 1, 1972.

Several comments indicated that the proposed effective date of January 1, 1971, would leave many manufacturers unable to comply, particularly with respect to multipurpose passenger vehicles and trucks. Therefore, it has been determined that there is good cause for specifying an effective date more than 1 year after the date of publication.

Issued on September 23, 1970.

Charles H. Hartman,  
Acting Director.

**35 F.R. 15290**  
**October 1, 1970**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 207

### Seating Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses (Docket No. 2-12; Notice No. 4)

An amendment to Motor Vehicle Safety Standard No. 207, Seating Systems, was published on October 1, 1970 (35 F.R. 15290). Thereafter, pursuant to § 553.35 of the procedural rules (49 CFR 553.35, 35 F.R. 5119), petitions for reconsideration were filed by the Ford Motor Company and Rolls Royce, Ltd.

The petition of Rolls Royce, Ltd., sought to amend § S4.2.1, *Seat adjustment*, to permit a displacement of 2 inches during the application of the required force. The company stated that such an allowance was necessary to accommodate power seats that are continuously adjustable. Although the Administration has determined that it is not advisable to permit a specific displacement, the special circumstances of the power seat warrant a more explicit interpretation of the term "adjusted position" as employed in the standard.

Some types of manual adjustment device have a small amount of slack, that is detected during the test procedure but is not an indication of incipient failure and is therefore not considered to affect the conformity of the system. In reviewing the characteristics of power adjustment devices, the Administration has concluded that some similar amount of slack may exist in such systems and that it should not be the basis for a finding of non-conformity. The Administration will consider a continuously adjustable power seat to have remained in its adjusted position despite some movement, if the movement is small and if it has stopped as the maximum required force level is reached.

The substance of the Ford petition was that the requirement for the seat back release control to be accessible to an occupant of the seat is not appropriate if the occupant does not need to use it to exit from the vehicle. This point was illustrated by the case of a seat in a truck cab that folds for access to a storage compartment. The Administration has determined that the situation used by Ford to illustrate its case is a situation in which relief from the requirement should be granted, but that where there is a seating position behind the folding seat the release control should continue to be accessible to the occupant of the folding seat. This requirement has been a part of the standard from the outset, and by making the latch more easily usable makes it less likely to be intentionally defeated.

Ford also indicated that it understood the standard to require that the seat be releasable from each seating position on the seat. This is not a correct reading of the standard. The Administration's interpretation continues to be that the release control must be accessible to at least one occupant of each folding part of a seat.

In consideration of the foregoing, section S4.3.1, *Accessibility of release control*, in Standard No. 207, 49 CFR 571.21, is amended. . . .

Effective date: January 1, 1972.

Issued on April 14, 1971.

Douglas W. Toms,  
Acting Administrator.

36 F.R. 7419  
April 20, 1971



## MOTOR VEHICLE SAFETY STANDARD NO. 207

### Seating Systems—Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses (Docket No. 2-12; Notice No. 3)

**S1. Purpose and scope.** This standard establishes requirements for seats, their attachment assemblies, and their installation to minimize the possibility of their failure by forces acting on them as a result of vehicle impact.

**S2. Application.** This standard applies to passenger cars, multipurpose passenger vehicles, trucks and buses.

**S3. Definition.** "Occupant seat" means a seat that provides at least one designated seating position.

#### S4. Requirements.

**S4.1 Driver seat.** Each vehicle shall have an occupant seat for the driver.

**S4.2 General performance requirements.** When tested in accordance with S5, each occupant seat, other than a side-facing seat or a passenger seat on a bus, shall withstand the following forces:

(a) In any position to which it can be adjusted—20 times the weight of the seat applied in a forward longitudinal direction;

(b) In any position to which it can be adjusted—20 times the weight of the seat applied in a rearward longitudinal direction;

(c) For a seat belt assembly attached to the seat—the force specified in subparagraph (a), if it is a forward facing seat, or subparagraph (b), if it is a rearward facing seat, in each case applied simultaneously with the forces imposed on the seat by the seat belt assembly when it is loaded in accordance with section S4.2 of Federal Motor Vehicle Safety Standard No. 210; and

(d) In its rearmost position—a force that produces a 3,300 inch-pound moment about the seating reference point for each designated seating position that the seat provides, applied to the upper cross-member of the seat back or the

upper seat back, in a rearward longitudinal direction for forward-facing seats and in a forward longitudinal direction for rearward-facing seats.

**S4.2.1 Seat adjustment.** Except for vertical movement of nonlocking suspension type occupant seats in trucks or buses, the seat shall remain in its adjusted position during the application of each force specified in S4.2.

**S4.3 Restraining device for hinged or folding seats or seat backs.** Except for a passenger seat in a bus or a seat having a back that is adjustable only for the comfort of its occupants, a hinged or folding occupant seat or occupant seat back shall be equipped with a self-locking device for restraining the hinged or folding seat or seat back and a control for releasing that restraining device.

**S4.3.1 Accessibility of release control.** [If there is a designated seating position immediately behind a seat equipped with a restraining device, the control for releasing the device shall be readily accessible to the occupant of the seat equipped with the device and, if access to the control is required in order to exit from the vehicle, to the occupant of the designated seating position immediately behind the seat. (36 F.R. 7419—April 20, 1971. Effective: 1/1/72)]

#### S4.3.2 Performance of restraining device.

##### S4.3.2.1 Static force.

(a) Once engaged, the restraining device for forward-facing seat shall not release or fail when a forward longitudinal force equal to 20 times the weight of the hinged or folding portion of the seat is applied through the center of gravity of that portion of the seat.

(b) Once engaged, the restraining device for a rearward facing seat shall not release or fail

when a rearward longitudinal force equal to 8 times the weight of the hinged or folding portion of the seat is applied to the center of gravity of that portion of the seat.

**S4.3.2.2 Acceleration.** Once engaged, the restraining device shall not release or fail when the device is subjected to an acceleration of 20 g. in the longitudinal direction opposite to that in which the seat folds.

**S4.4 Labeling.** Seats not designated for occupancy while the vehicle is in motion shall be conspicuously labeled to that effect.

**S5. Test procedures.**

**S5.1** Apply the forces specified in S4.2(a) and S4.2(b) as follows:

**S5.1.1** If the seat back and the seat bench are attached to the vehicle by the same attachments,

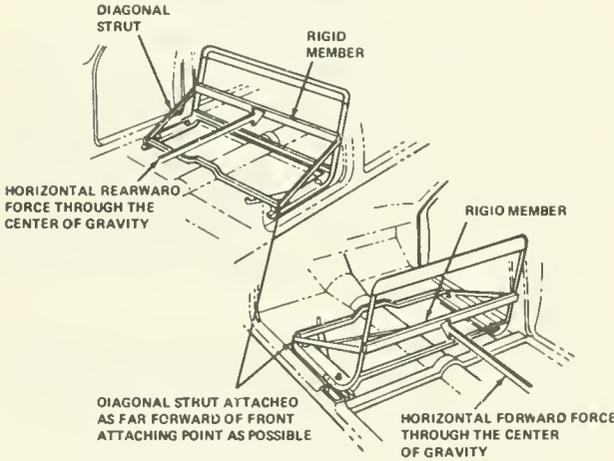


FIGURE 1

secure a strut on each side of the seat from a point on the outside of the seat frame in the horizontal plane of the seat's center of gravity to

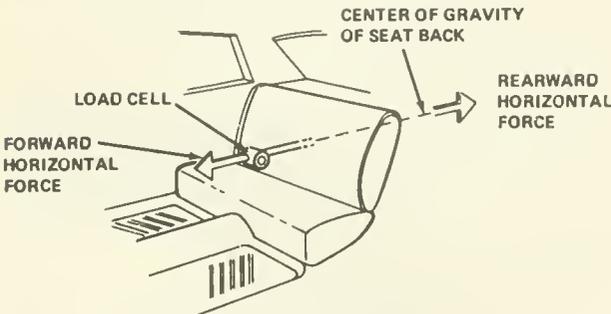


FIGURE 2

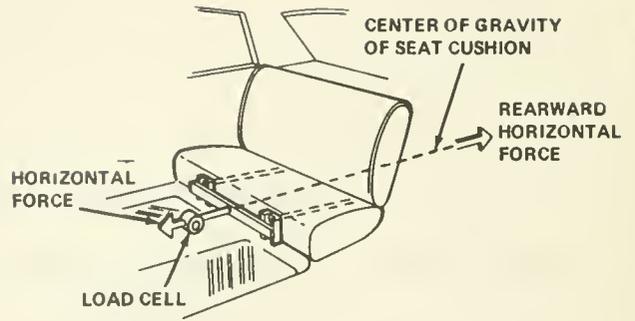


FIGURE 3

a point on the frame as far forward as possible of the seat anchorages. Between the upper ends of the struts place a rigid cross-member, in front of the seat back frame for rearward loading and behind the seat back frame for forward loading.

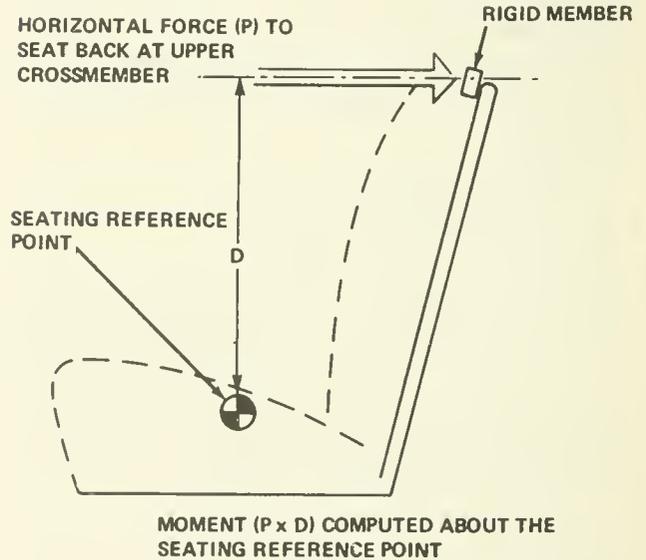


FIGURE 4

Apply the force specified by S4.2(a) or S4.2(b) horizontally through the rigid cross-member as shown in figure 1.

**S5.1.2** If the seat back and the seat bench are attached to the vehicle by different attachments, attach to each component a fixture capable of transmitting a force to that component. Apply forces equal to 20 times the weight of the seat back horizontally through the center of gravity of the seat back, as shown in figure 2, and apply forces equal to 20 times the weight of the seat

bench horizontally through the center of gravity of the seat bench, as shown in figure 3.

**55.2** Develop the moment specified in S4.2(d) as shown in figure 4.

**55.3** Apply the forces specified in S4.3.2.1 (a) and (b) to a hinged or folding seat as shown in figure 1 and to a hinged or folding seat back as shown in figure 5.

**55.4** Determine the center of gravity of a seat or seat component with all cushions and upholstery in place and with the head restraint in its fully extended design position.

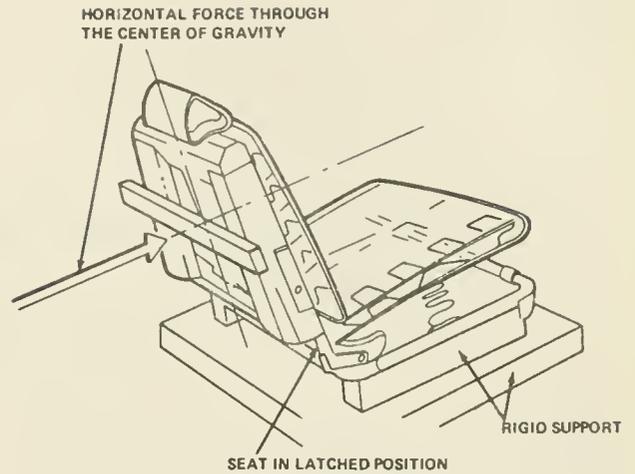


FIGURE 5

**35 F.R. 15290**  
**October 1, 1970**

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## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208

### Occupant Crash Protection in Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses

(Docket No. 69-7; Notice No. 9)

The purpose of this amendment to Standard No. 208, 49 CFR 571.21, is to specify occupant crash protection requirements for passenger cars, multipurpose passenger vehicles, trucks, and buses manufactured on or after January 1, 1972, with additional requirements coming into effect for certain of those vehicles on August 15, 1973, August 15, 1975, and August 15, 1977. The requirements effective for the period beginning on January 1, 1972, were the subject of a notice of proposed rulemaking published September 25, 1970 (35 F.R. 14941), and appear today for the first time in the form of a rule. The requirements for subsequent periods were issued in rule form on November 3, 1970 (35 F.R. 16927), and are reissued today in amended form as the result of petitions for reconsideration.

The substantive rulemaking actions that preceded this amendment are as follows:

(a) May 7, 1970 (35 F.R. 7187)—Proposed requirements and a schedule for the adoption of passive restraint systems and interim active systems.

(b) September 25, 1970 (35 F.R. 14941)—Proposal for a modified interim set of requirements effective January 1, 1972.

(c) November 3, 1970 (35 F.R. 16927)—Rule amending Standard No. 208 to specify requirements for passive restraints, effective July 1, 1973.

(d) November 3, 1970 (35 F.R. 16937)—Proposed additional requirements and conditions to be contained in Standard No. 208.

Following issuance of the November 3 amendment, petitions for reconsideration were filed pursuant to § 553.35 of the procedural rules (49 CFR 553.35, 35 F.R. 5119) by Japan Automobile

Manufacturers Association, Inc., American Safety Belt Council, Peugeot, Inc., American Motors Corp., Volvo, Inc., Ford Motor Co., Chrysler, Chrysler United Kingdom, Ltd., International Harvester Co., Automobile Manufacturers Association, General Motors Corp., Volkswagen of America, Inc., Takata Kojyo Co., Ltd., Renault, Inc., American Motors (Jeep), Rolls-Royce, Ltd., American Safety Equipment Corp., Hamill Manufacturing Co., Energy Systems Division (Olin), American Association for Automotive Medicine, Checker Motors Corp., Eaton Yale and Towne, Inc., and the American Academy of Pediatrics.

Concurrently with the evaluation of the petitions, the Administration has reviewed the comments received in response to the September 25 and November 3 proposals, and the interim occupant protection requirements are combined herein with the requirements for later periods.

The standard establishes quantitative criteria for occupant injury, as determined by use of anthropomorphic test devices. For the head, the criterion is a severity index of 1,000, calculated according to SAE Information Report J885a; for the upper thorax, it is a deceleration of 60g except for a cumulative period of not more than 3 milliseconds; and for the upper legs it is an axial force of 1,400 pounds. A fourth criterion is that the test devices must be contained by the outer surfaces of the passenger compartment.

For systems that provide complete passive protection there are three vehicle impact modes in which a vehicle is required to meet the injury criteria. In the frontal mode, the vehicle impacts a fixed collision barrier perpendicularly or at any angle up to and including 30° in either

Effective: 1/1/72; 8/15/73;  
8/15/75; 8/15/77

direction from the perpendicular while traveling longitudinally forward at any speed up to 30 m.p.h. In the lateral mode, the vehicle is impacted on its side by a barrier moving at 20 m.p.h. In the rollover mode, the vehicle is rolled over from a speed of 30 m.p.h.

On January 1, 1972, a passenger car will be required to provide one of three options for occupant protection: (1) Passive protection system that meets the above injury criteria in all impact modes at all seating positions; (2) lap belts at all positions, with a requirement that the front outboard positions meet the injury criteria with lap-belted dummies in a 30-m.p.h. perpendicular barrier crash; or (3) lap-and-shoulder-belt systems at the front outboard positions that restrain test dummies in a 30-m.p.h. barrier crash without belt or anchorage failure, and lap belts in other positions.

Both the second and third options require warning systems that activate a visible and audible signal if an occupant of either front outboard position has not extended his lap belt to a specified length. Lap belts furnished under the second or third options must have emergency-locking or automatic-locking retractors at all outboard positions, front and rear. Shoulder belts furnished under the third option must have either manual adjustment or emergency-locking retractors.

On August 15, 1973, a passenger car will be required to provide one of two options for occupant protection: (1) Passive protection that meets the injury criteria in all impact modes at all seating positions; or (2) a system that provides passive protection for the front positions in a perpendicular frontal fixed barrier crash, that includes lap belts at all seating positions such that the injury criteria are met at the front positions both with and without lap belts fastened in a perpendicular frontal fixed barrier crash, and that has a seat belt warning system at the front outboard positions.

On and after August 15, 1975, a passenger car will be required to meet the injury criteria in all impact modes at all seating positions by passive means.

Multipurpose passenger vehicles and trucks with gross vehicle weight ratings of 10,000 pounds or less manufactured from January 1,

1972, to August 15, 1975, will have the option of meeting the injury criteria in all impact modes at all seating positions by passive means, or of providing a seatbelt assembly at each designated seating position. From August 15, 1975, to August 15, 1977, these vehicles will be required to meet one of the two options permitted passenger cars during the period August 15, 1973, to August 15, 1975. On and after August 15, 1977, they will be required to meet the full passive crash protection requirements that become effective for passenger cars on August 15, 1975. Forward control vehicles, however, may continue to use belt systems, and certain other specialized types of vehicles may continue to provide only head-on passive protection.

Multipurpose passenger vehicles and trucks with a GVWR of more than 10,000 pounds manufactured on or after January 1, 1972, will have the option of providing protection by passive means that meet all the crash protection requirements or of installing seat belt assemblies at all seating positions. Buses manufactured after January 1, 1972, will be required to provide one of these options for the driver's seating position.

The remainder of this preamble is separated into sections dealing with (I) the comments received in response to the September 25 proposal for the interim system, (II) the petitions for reconsideration of the November 3 rule on the requirements for later periods, and (III) the comments received and action taken pursuant to the November 3 proposal for additional requirements.

I. The September 25 proposal specified a series of options for occupant protection in passenger cars manufactured on or after January 1, 1972. Each option represented a significant advance over the level of protection afforded occupants by present seat belt systems. Upon consideration of comments requesting postponement of the requirements, it has been determined that compliance with one or another of the options by January 1, 1972, is reasonable and practicable. In response to the comments and other available information, however, certain changes have been made.

In the proposal, the first option consisted of a passive protection system that would meet the

injury criteria at all seating positions in a 30 m.p.h. perpendicular frontal impact. A large number of respondents (to this notice and to others dealt with herein), both within and outside of the concerned industries, took the position that the requirements for installation of seat belts should not be dropped until the vehicles in question provided protection in angular, lateral, and rollover crash modes, in addition to the direct frontal mode. After detailed consideration of these arguments and other available data, it has been determined that the added cost of seatbelt systems is justified, even where vehicles provide passive frontal-impact protection. Accordingly, the first option, the only one under which manufacturers are allowed not to provide seat belts in their vehicles, requires a passive protection system that meets the injury criteria in all of the impact modes mentioned above.

The second option set forth in the proposal consisted of Type 1 seatbelt assemblies with a warning system at the front outboard positions and Type 1 or Type 2 assemblies at the other positions. The front outboard positions were either to meet the injury criteria in a perpendicular impact by use of the belts, or be protected by energy absorbing materials conforming to amended requirements proposed for Standards No. 201 and 203. The latter alternative was the subject of several adverse comments, and in the light of these comments and the tentative nature of the proposed amendments to Standards No. 201 and 203, the alternative has been deleted. As adopted, the option provides that the front outboard positions must meet the injury criteria in a perpendicular fixed barrier crash with the test dummies restrained by Type 1 belts only. The wording that a vehicle should have "either a Type 1 or a Type 2" seatbelt assembly under this option has been changed to refer simply to Type 1 (lap belt) assemblies. A manufacturer may at his option provide upper torso restraints, which do or do not attach to the lap belts. The essence of the second option, however, is that the vehicle be designed to provide protection with lap belts alone, in view of their much higher level of public use in comparison with lap-and-shoulder combinations. Vehicles under this option, therefore, must provide lap belts that are usable separately.

The third option proposed in the September 25 notice has been adopted with some changes. It consists of an improved combination of lap and shoulder belts in the front outboard seating positions, with lap belts in other positions. The belts and anchorages at the front outboard positions must be capable of restraining a dummy in a 30-m.p.h. frontal perpendicular impact without separation of the belts or their anchorages.

The seatbelt warning system required under the second and third options has been modified somewhat in the light of the comments, to clarify the requirements and to restrict its operation to situations where the vehicle is likely to be in motion. The notice proposed that the system operate when the driver or right front passenger, or both, occupied the seat but did not fasten the belt about them. It was stated in several comments such systems operating through the buckle are relatively complex and that leadtime would be a significant problem. Upon evaluation of the comments, it has been decided to provide for warning system operation when the driver's belt is not extended to a length that will accommodate a 5th-percentile adult female, or when the right front passenger's seat is occupied and that belt is not extended far enough to fit a 50th-percentile 6-year-old. Keying the system to belt withdrawal is technologically simpler, and still provides protection against tampering. The notice had proposed that the system operate whenever the vehicle's ignition was in the "on" position. It was pointed out in the comments that situations arise in which the vehicle is at rest with the ignition on and the engine running, as when picking up or discharging passengers. To avoid the annoyance to vehicle occupants of the warning system in such situations, the standard provides that the system shall operate only if the ignition is in the "on" position and the transmission is in a drive position.

The seat belt system requirements have also been changed somewhat in response to comments. The notice had proposed to require retractors at all seating positions in those options specifying seat belts. Several comments stated that the installation of retractors at inboard positions would require extensive redesign of bench-type seats. In the light of the low occupancy rate for the center seats, the difficulties in meet-

ing the requirement, and the short leadtime available, the requirement for center-position retractors has been omitted.

The requirement that the shoulder and pelvic restraints be releasable at a single point by a pushbutton-type action has been retained. The Administration considers that single-point release is essential to the convenient operation of the seat belts, and that standardization of the buckle release device is also important, particularly in emergency situations. However, the additional requirement for one-hand fastening by the driver has been deleted. Adjustable bench seats would require major redesign in many cases, and it has been determined that the additional convenience afforded the driver would not be sufficient to justify the cost and leadtime problems that would result.

A number of comments noted that no dimensions were specified in the notice for the various occupants, and that there were no dimensions of this type in general use. To remedy the problem, the standard provides a table of dimensions for various sizes of adult occupants and 50th-percentile 6-year-olds. The latter set of dimensions has been adopted because of the availability of manikins at that size.

In response to several comments stating that the proposed 8-inch distance between the occupant's centerline and the intersection of the upper torso belt with the lap belt was too great, the distance has been reduced to 6 inches. It has been determined that a 6-inch distance will provide satisfactory protection and lessen the convenience problems that might be created with the greater distance.

II. With few exceptions, the petitions for reconsideration of the November 3 amendment requested that the requirement for mandatory passive protection be postponed. The length of postponement requested varied from 2 months to several years. After full consideration of the issues raised by the petitions, it has been decided to continue to require passive protection for the front seating positions of passenger cars in 1973. In order to ease the problem of model year scheduling, the date is changed from July 1, 1973, to August 15, 1973. The petitions did not offer sufficient reasons to change the Administration's position as set forth in previous notices in

this docket, that passive protection systems are a vitally important step in reducing the death and injury toll on our highways, and that the relevant technology is sufficiently advanced to provide this basic protection, in accordance with the performance requirements and the time schedule that have been specified. The petitions that requested a postponement of all passive protection requirements beyond August 15, 1973, are therefore denied.

However, considerable data was presented in the petitions to the effect that the development of passive systems for the various impact modes has not proceeded at an equal rate. It appears that a number of manufacturers may be unable to comply with the lateral crash protection requirements in 1973. Accordingly, it has been decided to establish two restraint options for the front seating positions of passenger cars manufactured on or after August 15, 1973, and before August 15, 1975. A manufacturer may choose, first, to provide a passive system that meets the occupant crash protection requirements at all seating positions, in all impact modes. If he is unable to provide such full passive protection, he may choose to adopt a system that provides passive protection for the front occupants in a head-on collision, and also, includes a lap belt at each seating position with a seatbelt warning system for the front outboard positions. Under this option, the injury criteria must be met at each front position in a perpendicular barrier crash up to 30 m.p.h., both with and without the lap belts fastened. This option thus resembles the second option permitted during the interim period, except that the injury criteria must also be met with the test dummies unrestrained, and at the front center position as well as the front outboard positions.

The date on which a passenger car must provide passive means of meeting the injury criteria in a side impact is changed to August 15, 1975, to reflect the greater leadtime needed to develop such passive systems. To provide uniform phasing, and allow time for development of passive protection in the angular-impact and roll-over modes, the effective date for these requirements is also set at August 15, 1975. Thus, after August 15, 1975, each passenger car must meet the crash protection requirements at each seating

position in all impact modes by means that require no action by vehicle occupants.

Petitions of manufacturers of multipurpose passenger vehicles and trucks with GVWR of 10,000 pounds or less stated that the trucking industry as a whole would need additional time to assimilate the experience of passenger car manufacturers, before passive systems could be properly installed on their vehicles. The Administration has determined that additional leadtime is required for these vehicles. The standard accordingly provides that the protection required for passenger cars in 1973 will be required for multipurpose passenger vehicles and trucks with a GVWR of 10,000 pounds or less on August 15, 1975. The protection required for passenger cars on August 15, 1975, will be required of these vehicles on August 15, 1977.

The notice of proposed rulemaking published on November 3, 1970, proposed to make the passive protection requirements applicable to open-body type vehicles. Review of the comments and the petitions for reconsideration leads to the conclusion that this type of vehicle, along with convertibles, walk-in van-type vehicles, motor homes, and chassis-mount campers cannot be satisfactorily equipped with a complete passive protection system. Accordingly, the standard provides that only the head-on passive protection system required for passenger cars in 1973 will be required for each of these types on August 15, 1977, and thereafter. It has been further determined that it may not be feasible to provide passive protection in some forward control vehicles, and such vehicles are therefore permitted the option of providing seat belt assemblies at all seating positions.

A number of petitions objected to the requirement for a minimum speed below which a crash-deployed system may not deploy. Upon consideration of the petitions, it has been determined that it is preferable to allow manufacturers freedom in the design of their protective systems at all speeds, and this requirement is hereby deleted from the standard.

The injury criteria specified in the November 3 amendment were the subject of numerous petitions. The basic objections to the head injury criteria were that the 70g-3-millisecond requirement was too conservative, with respect to both

acceleration levels and time factors. Review of these objections and a reevaluation of the information available to the Administration leads to the conclusion that the head injury criteria can be more appropriately based on the severity index described in the Society of Automotive Engineers Information Report J885(a), June 1966. Accordingly, the standard adopts as the criterion for head injury a severity index of 1,000 calculated by the method in the SAE report.

The severity index is based on biomechanical data derived from head injury studies and does not adapt itself readily to chest-injury usage. Several petitions stated that the chest injury criteria were set at too low a level. In some respects, a higher "g-level" on the chest actually increases the protective capabilities of the system, if properly designed, since it more effectively utilizes the available space in which the occupant can "ride down" the crash impact—an especially important factor in higher-speed crashes. Therefore, in accordance with data currently available, a chest tolerance level of 60g, except for a cumulative period of 3 milliseconds, is hereby adopted.

No data was received to support the contention of several petitioners that the upper leg load was too conservative. The maximum force level of 1,400 pounds appears well founded and is retained.

Several petitions objected to the condition that vehicles be tested at their gross vehicle weight rating. Under review of the appropriateness of this requirement for passenger cars and a review of loading patterns on trucks, it has been decided to alter the condition to specify that passenger cars are tested at a weight that represents their unloaded vehicle weight (recently defined in the *Federal Register* of Feb. 5, 1971, 36 F.R. 2511) plus the weight of rated cargo capacity and the specified number of test devices. Trucks are to be tested at a weight that approximates a half-loaded vehicle, with the load secured in the cargo area, plus the specified number of test devices.

The use of the anthropomorphic test device described in SAE J963 was objected to by several petitioners, on the grounds that further specifications are needed to ensure repeatability of test results. The Administration finds no sufficient

reason to alter its conclusion that the SAE specification is the best available. The NHTSA is sponsoring further research and examining all available data, however, with a view to issuance of further specifications for these devices.

In response to other comments with respect to test conditions, the test devices' hand positions are adjusted to reduce apparent test variability. Also, the frequency filtration criteria of SAE Recommended Practice J211 have been substituted for the filtration criteria employed in the November 3 notice.

III. The notice of proposed rulemaking issued on November 3, 1970, dealt with several aspects of the occupant protection standard for which changes contemplated by the Administration, after review of the comments to the May 7 notice, were thought to require additional opportunity for comment. These aspects included a proposed deletion of the exemption from the rollover requirements previously proposed for open-body type vehicles, the raising of the low-velocity deployment requirement from 10 to 15 m.p.h., the establishment of requirements for the lateral component of head and chest acceleration, and the amendment of the test conditions for the lateral impact and rollover requirements.

Since the subject of low speed deployment and the question of exemptions were also the subjects of petitions for reconsideration under the November 3 rule, the disposition of these matters has been noted in the preceding section. For the reasons given therein, the low-velocity deployment requirement has been omitted, and the exemptions have been expanded to include forward control vehicles, convertibles, walk-in van-type trucks, motor homes, and chassis-mount campers. These type descriptions are in general use among manufacturers to describe vehicles sharing certain well-defined characteristics. Definitions of these types of vehicles may, as found necessary in the future, be added to § 571.3 *Definitions*.

Upon review of the comments and other information available to the Administration, it has been decided that the establishment of requirements for the lateral component of head and chest acceleration is not feasible at this time. However, it is anticipated that biomechanical studies will shortly provide data regarding

lateral tolerances on which a requirement can be based and that rulemaking action will thereupon resume.

The conditions proposed for the lateral impact and rollover tests have been adopted as proposed without significant change. Comments on the lateral impact test revealed no significant support for a fixed barrier collision of the type proposed in the May 7 notice, although several recommended use of the moving barrier specified in SAE Recommended Practice J972 and others requested that the height of the barrier be lowered from 65 inches to 36-38 inches as specified in SAE J972. The decision to retain the test and barrier dimensions as proposed in the November 3 notice was made after a full review of the SAE procedures.

The test as adopted is considered to afford greater repeatability than the SAE procedure, which permits a much more complex interaction between the barrier and the impacted vehicle. The height of the barrier has been retained at 65 inches so that it will test the head impact protection afforded by the vehicle when struck by a surface extending to head height. Passenger compartment intrusion of the type that might result from use of a lower barrier is the subject of a separate rulemaking action on side door strength.

Some comments suggested that the wording of the proposed procedures, that the moving barrier undergo no deformation or nonlongitudinal movement, was unduly restrictive. The wording is not, however, intended to describe an actual test, but to establish the condition that the vehicle must be capable of meeting the stated requirements no matter how small the degree of deformation or nonlongitudinal movement of the barrier. This issue, in the case of the moving barrier, is thus analogous to that in the definition of "fixed collision barrier" (35 F.R. 11242, July 14, 1970). To more clearly reflect this position and the legal similarity of the two types of barriers, the word "significant" is added to the conditions relating to movement and deformation of the barrier.

Several comments stated that the rollover test would not produce repeatable results. Although refinements may be made in the procedure before the date on which rollover protection becomes

mandatory, the Administration has determined that the test as adopted is more satisfactory than any other suggested thus far. The kinematics of a rollover type accident are such that variability in vehicle behavior may often be more visible than in other test procedures.

A number of other minor issues were raised by the petitions, and each has been carefully evaluated by the Administration. With respect to those objections and suggestions not specifically mentioned elsewhere in this notice, the petitions are hereby denied.

In light of the foregoing, Motor Vehicle Safety Standard No. 208 in § 571.21 of Title 49, Code of Federal Regulations, is amended . . . with effective dates as specified in the text of the standard.

Issued on March 3, 1971.

Douglas W. Toms,  
Acting Administrator.

**36 F.R. 4600**  
**March 10, 1971**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208****Occupant Crash Protection****(Docket No. 69-7; Notice 10)**

The purpose of this notice is to respond to petitions for reconsideration of Motor Vehicle Safety Standard No. 208, *Occupant Crash Protection*, in § 571.21 of Title 49, Code of Federal Regulations. The petitions addressed herein are those dealing with seat belts and seat belt warning systems. A notice responding to petitions concerning the passive protection aspects of the standard will be issued shortly and the standard republished in its entirety at that time.

The standard as issued March 3, 1971 (36 F.R. 4600), established January 1, 1972, as the first date in the progressive stages of the Occupant Crash Protection requirements. Two petitioners, Mercedes-Benz and American Motors, requested a delay in the introduction of the interim protection systems. American Motors requested a delay until April 1, 1972, to allow for adequate compliance testing, and Mercedes requested a date of July 1, 1972, to avoid disruption of the 1972 model production which begins on July 1, 1971. Upon review of all available information, the NHTSA has concluded that the date is not unreasonably demanding, and the requests are denied.

The improved seat belt systems required in passenger cars that do not provide full passive protection were the subject of several petitions. Primary attention was directed to the belt warning system and the conditions under which it must operate. As issued on March 3, the standard provides that the system shall operate when and only when the ignition is on, the transmission is in any forward or reverse position, and either the driver's lap belt is not extended at least to the degree necessary to fit a 5th-percentile adult female or a person of at least the weight of a 50th-percentile 6-year old is seated

in the right front position and the belt is not extended to the length necessary to fit him.

The intent of the transmission position requirement was to require operation of the warning system when the vehicle was likely to be in motion, and the effect of the "when and only when" phrase was to require deactivation in all other positions. Some petitioners argued that rearward motion was not likely to be fast enough to present a hazard. Others stated, on the other hand, that vehicles with automatic transmissions should deactivate the system only in "Park", to encourage drivers to use that position when leaving the vehicle with the engine running. Similarly, it was requested that alternative means of warning system deactivation be permitted on cars with manual transmissions, with one alternative being application of the parking brake. The NHTSA has found these arguments to have merit, and therefore amends S7.3 of the standard in several respects. The amended section requires, as the first condition necessary to activate the warning, that the ignition be "on" and that the transmission be in a forward gear. Actuation is permitted in reverse, but is no longer required. The section is further amended to require that the system on a car with automatic transmissions shall not activate when the transmission is in "park" and that the system on a car with manual transmission shall not activate when the parking brake is on or, alternatively, when the transmission is in neutral.

Several petitions stated that although the length necessary to fit a 50th-percentile 6-year old or a 5th-percentile adult female may be objectively determinable, the sensor in a system may not exactly measure this length due to unavoidable variances in production. To allow for this

variance, a manufacturer must calibrate the retractors so that the range of this variance will be beyond the minimum length, and as a result it is likely that the warning will continue to operate in some situations where a small occupant has properly fastened the belt. A similar objection was raised by Mercedes-Benz and illustrated by the case of a small child whose bouncing could cause the belt to retract far enough to trigger the warning intermittently. These objections are considered to have merit, and the NHTSA has therefore decided to specify a range of extensions below which the system must activate and above which it must not activate. The lower end of the range is an extension of 4 inches from the normally stowed position, and the upper end is the extension necessary to fit a 50th-percentile 6-year-old child when the seat is in the rearmost and lowest position. This range will allow manufacturers a tolerance of several inches in most cases and will enable them to avoid the problems of inadvertent activation.

Mercedes-Benz requested that the warning be deactivated by closing the buckle and stated that this would be simpler and more effective than deactivation by belt extension. Although Mercedes' objections are partially met by the amendments made by this notice to the warning system requirements, a related consequence of the amendments is that the extension needed to close the buckle would fall within the range of discretionary deactivation. There does not appear to be good reason to prohibit deactivation by means of the buckle, and the standard is therefore amended to permit buckle deactivation as an alternative to deactivation by measurement of the belt extension.

General Motors requested a minimum duration for the warning signal beyond which it would not be required to operate. On review, this request appears to satisfy the need for warning and to reduce the annoyance of the signal in situations where unfastening of the belt is necessary. A minimum activation period of one minute is therefore provided.

One other request for amendment of the warning system requirements has been found meritorious. American Motors requested that the

words "Fasten Belts" be permitted as an alternative to "Fasten Seat Belts." The change would not affect the sense of the message, and the request is granted. Requests in other petitions for the use of symbols in place of words, and for a two-stage warning sequence, have been evaluated and rejected.

In its petition, Chrysler requested the adoption of size specifications for the buttocks of a dummy representing a 6-year-old child, on the grounds that currently available dummies do not correspond to human shape and do not activate the Chrysler warning system as a child would. The problem is not considered serious enough to warrant amendment of the standard in the absence of satisfactory data on the shape of 6-year-old children, and the request is denied.

A number of petitions dealt with other aspects of the seat belt options. The requirement for retractors at all outboard seating positions, including the third seats in station wagons, was objected to by Ford and Chrysler because of installation difficulties and the low frequency of seat occupancy. The similarity of these seating positions to the center positions, which are exempt from the reactor requirements, has been found persuasive and retractors are therefore required only for outboard positions on the first and second seats.

Another petition requested that the shoulder belt of Type 2 assemblies should not adjust to fit 50th-percentile 6-year olds, as presently required for passenger seats by S7.1.1. As pointed out in the petition, the previous rule had specified the 5th-percentile adult female as the lower end of the range for shoulder belts. The change effected by the March 3 rule was inadvertent, and the range of occupants is therefore specified as being from the 5th-percentile adult female to the 95th-percentile male.

Correspondence from Toyo Kogyo requesting an interpretation of S7.1.2 has pointed out a need to clarify the requirement that the intersection of an upper torso belt with a lap belt must be six inches from the occupant's centerline. The phrase "adjusted in accordance with the manufacturer's instructions" is intended to refer to adjustment of the upper torso belt, and not to the lap belt which must adjust auto-

matically. The section is amended to clarify this intent.

The second options under the 1972 and 1973 requirements (S4.1.1.2, S4.1.2.2) are amended to expressly permit a Type 2 seat belt assembly with a detachable upper torso restraint at any seating position. A choice of belt systems is permitted under the third option in 1972, and there was no intent under the second options to limit all positions to Type 1 belts.

Several requests and questions were raised regarding the status of "passive" seat belt systems under the standard as issued March 3. Some belt-based concepts have been advanced that appear to be capable of meeting the complete passive protection options and further regulation of their performance does not appear necessary. With respect to the options other than the complete passive protection options, a question has been raised as to whether a passive belt must be used in conjunction with active belt systems or conform to the adjustment, latching, and warning system requirements applicable to active belts. Upon review, the NHTSA has concluded that the passive belt system that is not capable of full protection in all crash modes is in some respects appropriately regulated by seat belt requirements, and is in other respects entitled to treatment as a passive system.

To deal expressly with passive belts, a new general requirements section is added to state the applicability of various requirements to passive belts and to make it clear that redundant active belts need not be employed if passive belts are used to meet any option requiring Type 1 or Type 2 belts.

Many of the requirements applicable to belts have been adopted because of properties that

exist regardless of whether the system is active or passive. The range of the belt's adjustment, the elasticity and width of its webbing, and the integrity of its attachment hardware are all known to affect the protection given. As amended, the standard therefore requires a passive belt to conform to the adjustment requirements of S7.1 and to the webbing, attachment hardware, and assembly performance requirement of Standard No. 209. The petitioners' objections as to the application of the latching requirements to a system that does not require latching and of the warning system requirements to a system that would be functional unless willfully defeated have been found to have merit. A passive belt system is therefore not required to conform to S7.2 and S7.3.

In order to assure that a passive belt or other passive system will not hinder an occupant from leaving the vehicle after a crash, the NHTSA proposes in a separate notice in today's issue of the *Federal Register* (36 F.R. 12866) to require a release for the occupant that either operates automatically in the event of a crash, or operates manually at a single point that is accessible to the seated occupant.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 208, Occupant Crash Protection, in § 571.21 of Title 49, Code of Federal Regulations, is amended. . . . Effective date: January 1, 1972.

Issued on July 2, 1971.

Douglas W. Toms  
Acting Administrator

36 F.R. 12858  
July 8, 1971



## Preamble to Amendment to Motor Vehicle Safety Standard No. 208

### Occupant Crash Protection

(Docket No. 69-7; Notice 12)

The purpose of this notice is to respond to petitions filed pursuant to § 553.35 of Title 49, Code of Federal Regulations, requesting reconsideration of Motor Vehicle Safety Standard No. 208, Occupant Crash Protection, 49 CFR 571.21, published on March 10, 1971 (36 F.R. 4600).

The petitions covered by this notice deal with the passive restraint requirements, and with the restraint options available after August 15, 1973. Petitions relating to seat belts and seat belt warning systems were answered in a notice published in the *Federal Register* on July 8, 1971 (36 F.R. 12858). Each request contained in the petitions has been evaluated. Particular requests relative to the March 10, 1971, rule not expressly mentioned in this notice or in the notice of July 8 have been denied.

To avoid possible confusion as to the number of test devices to be used in a test, the NHTSA is amending S5.1 at the request of American Motors and General Motors to indicate more clearly that test devices are to be placed at all seating positions unless a lesser number is prescribed in S4.

Several petitioners sought amendment of the readiness indicator requirement in S4.5.2 to limit the components of a deployable system that must be monitored. In particular, it was stated that the integrity of a pressure vessel could be diminished by a pressure gauge, and that the reliability of electrically activated explosive release devices would be impaired if the activating wire had to be monitored. To permit manufacturers to avoid designs that are prone to deterioration, the requirement has been amended by omitting specific reference to compressed gases and electrical circuits.

Several petitions requested changes with respect to the weight at which a multipurpose

passenger vehicle, truck, or bus is to be tested. It was stated that the half-loaded weight specified in the standard was unrepresentative of the weights of vehicles involved in crashes, and that it placed an unreasonably severe strain on the vehicle. On consideration of the data and arguments presented, it has been determined that a reduction in the loading of these vehicles is appropriate. The required vehicle weight is accordingly reduced to 300 pounds plus the weight of the necessary anthropomorphic test devices. It should be noted that instrumentation is to be included as part of the 300 pounds.

With regard to the placement of test devices in the vehicle, it was pointed out that the specified position of the driver's right foot often produced an unnaturally awkward result and that the positioning might be achieved in some cases only by sacrificing some portion of underdash padding. In response to these points, the positioning requirement is amended to permit more natural placement, with the foot in contact with the undepressed accelerator pedal.

The petitions included several objections to the requirements for rollover testing. It was argued that the test did not produce repeatable results with respect to vehicle behavior. The NHTSA has given serious consideration to these arguments, and has conducted a series of vehicle tests according to the procedures of the standard. These tests have demonstrated a high degree of repeatability in vehicle behavior. Occupant ejection in rollover accidents, and the retention of occupants in rollovers is a major element in effective crash protection. The petitions to delete the rollover test from the standard are therefore denied.

Some petitions objected to the requirement for barrier tests at "any angle up to 30° in either

direction from the perpendicular." The NHTSA is aware that such an all-angles test may be more demanding than a test that arbitrarily selects two angles, such as 15° and 30°. Manufacturers are free, however, to limit their testing to the "worst case." Since accidents occur at all angles, it is considered important that vehicles be capable of meeting the protection requirements at any angle within the prescribed limits.

The lateral moving barrier test was also objected to by several petitioners, particularly by manufacturers of smaller vehicles who consider the 4,000-pound weight of the barrier to be excessive. The lateral moving barrier test is included in the standard because of the disproportionately high number of serious injuries suffered in side impacts. The weight of the barrier was chosen to represent the average weight of domestic passenger cars, the vehicles most likely to strike the side of a vehicle, regardless of the impacted vehicle's size. The requirement is retained.

The use of the Severity Index of 1000 as the criterion for head injury was objected to as too stringent, and a more lenient index requested. Considering the present state of the art in head injury measurement, it has been determined that a Severity Index of 1000 is the most acceptable criterion at this time, and it has therefore been retained. In a related objection, Chrysler stated that the 1000-Hz channel class requirement for accelerometers in the head was too high. In the judgment of the NHTSA, however, the 1000-Hz channel class specification as incorporated in SAE J211 represents an acceptable level of instrument sensitivity. The requirement has therefore been retained.

In the context of the petitions regarding the rollover requirements, it was suggested that the requirement of S6.1 that all portions of the test device be contained within the passenger compartment during the test was unnecessarily stringent. In retaining this requirement the NHTSA intends to require a substantial degree of passenger compartment integrity in all types of accidents. The test condition that specifies windows to be in the up position is retained to restrict random excursions of test devices, and to provide for consistency in the evaluation of test results.

General Motors noted in its petition that there are a large number of State and local laws concerning the shipment, storage and use of pressurized cylinders and explosive devices that might be used in air bag systems. Many of these laws are at variance with the regulations of the Department of Transportation's Hazardous Materials Regulations Board governing these materials (found in Chapter 1, Subtitle B, of Title 49, Code of Federal Regulations). If these State and local laws were to be applied to equipment that is part of a large proportion of the new passenger cars in this country, the distribution, sale, use, and maintenance of those vehicles could be seriously hindered. General Motors suggested that the Federal regulations governing these materials be incorporated into the requirements of Standard No. 208, thus preempting all State and local requirements (i.e., requiring them to be identical) under section 103(d) of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392(d). The NHTSA recognizes this problem, and is considering various methods of solving it, in consultation with other concerned agencies. No regulatory action to that end is taken in this notice, but some such action is anticipated in the near future.

Several petitioners noted that the requirements for anthropomorphic test devices specified in the standard, mainly those set forth in SAE Recommended Practice J963, do not completely define all the characteristics of the dummies that may be relevant to their (and the vehicle's) performance in a crash test. The NHTSA considers the comment valid. It would actually be difficult, if not impossible, to describe the test dummy in performance terms with such specificity. That every dummy that could be built to the specifications would perform identically under similar conditions. Of course, since the dummy is merely a test instrument and not an item of regulated equipment, it is not necessary to describe it in performance terms; its design could legally be "frozen" by detailed, blueprint-type drawings and complete equipment specifications. Such an action does not, however, appear to be desirable at this time. Considerable development work is in process under various auspices to refine the dynamic characteristics of anthropomorphic devices, to determine which designs are most prac-

licable, offer the most useful results, and best simulate the critical characteristics of the human body. The NHTSA is monitoring this work (and sponsoring some of it), and intends to propose amendments of the standard in accordance with it to add more detailed performance and descriptive specifications for the test dummies, although no changes are being made in that respect by this notice.

In the meantime, it should be understood that the NHTSA does not intend that a manufacturer's status with respect to compliance will be jeopardized by possible variances in test dummies permitted by the present set of specifications. In the agency's judgment, a test dummy that conforms to the specifications incorporated by the standard is an adequate test tool for determining the basic safety characteristics of a vehicle. If the NHTSA concludes after investigation that a manufacturer's tests are properly conducted, with dummies meeting the specifications, and show compliance with the standard, and that differences in results from tests conducted by the agency are due to differences in the test dummies used by each, the agency tests will not be considered to be the basis for a finding of noncompliance.

A number of the petitioners sought a delay in the effective dates of the standard, particularly the August 15, 1973, date which passenger cars are required to provide at least head-on protection for front-seat occupants by means that require no occupant action. Several vehicle manufacturers argued that further time is needed to prepare for the introduction of passive restraint systems in all passenger car lines. They pointed out that much of their effort during the past year has been spent refining and testing the design of these systems in order to ensure satisfactory performance under the most adverse conditions that may be encountered by vehicles in use. Mandatory introduction of passive restraints in all passenger cars by the August 15, 1973, date, it was argued, would impose severe financial hardships, because of the difficulties that would be encountered in obtaining tools, setting up production lines, and working out the inevitable production and quality-control prob-

lems for all their vehicles simultaneously, contrary to the normal practice in the industry.

It has been determined that these petitions have some merit. Materials submitted to the docket concerning the state of passive restraint development indicate that systems now available will meet the requirements of Standard 208 for passive frontal crash protection, and perform satisfactorily in other respects. It does not now appear, however, that tooling and production leadtimes will permit manufacturers to make large-scale introductions of passive systems before the fall of 1973. This agency is aware of the extreme dislocations, and the attendant financial hardships, that would be caused by requiring the world industry (to the extent of the vehicles sold in this country) to introduce major new systems in substantially all their passenger cars at the same time.

For these reasons, it has been determined that manufacturers should be allowed additional time to introduce passive protection systems. To that end, a notice of proposed rulemaking is published in this issue of the *Federal Register* that would allow manufacturers of passenger cars the option of installing seat belt systems with ignition interlocks for the period up to August 15, 1975. It is expected that this added leadtime will enable manufacturers to institute an orderly, phased introduction of passive systems into their vehicles, installing such systems in their various car lines, to the extent feasible, in advance of that date.

The July 8 notice indicated that the standard would be republished in its entirety upon publication of today's action. This has not been done, because of the limited number of amendments made by this notice.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 208, Occupant Crash Protection, in § 571.21 of Title 49, Code of Federal Regulations is amended . . .

Effective dates: January 1, 1972, with additional requirements effective at later dates, as indicated in the text of the rule published March 10, 1971 (36 F.R. 4600).

Effective: January 1, 1972

(Secs. 103, 108, 112, 114, 119, National Traffic and Motor Vehicle Safety Act, U.S.C. 1392, 1397, 1401, 1403, 1407, delegation of authority at 49 CFR 1.51)

Issued on September 29, 1971.

Douglas W. Toms  
Administrator

**36 F.R. 19254**  
**October 1, 1971**

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## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208

### Seat Belt Installations

(Docket No. 2-6; Notice 5)

The purpose of this amendment to Part 571 of Title 49, Code of Federal Regulations, is to add a new Motor Vehicle Safety Standard 216, (49 CFR § 571.216) that sets minimum strength requirements for a passenger car roof to reduce the likelihood of roof collapse in a rollover accident. The standard provides an alternative to conformity with the rollover test of Standard 208.

A notice of proposed rulemaking on this subject was issued on January 6, 1971 (36 F.R. 166). As noted in that proposal, the strength of a vehicle roof affects the integrity of the passenger compartment and the safety of the occupants. A few comments suggested that there is no significant causal relationship between roof deformation and occupant injuries in rollover accidents. However, available data have shown that for non-ejected front seat occupants in rollover accidents, serious injuries are more frequent when the roof collapses.

The roof crush standard will provide protection in rollover accidents by improving the integrity of the door, side window, and windshield retention areas. Preserving the overall structure of the vehicle in a crash decreases the likelihood of occupant ejection, reduces the hazard of occupant interior impacts, and enhances occupant egress after the accident. It has been determined, therefore, that improved roof strength will increase occupant protection in rollover accidents.

Standard 208 (49 CFR § 571.208), *Occupant Crash Protection*, also contains a rollover test requirement for vehicles that conform to the "first option" of providing complete passive protection. The new Standard 216 issued herewith is intended as an alternative to the Standard 208 rollover test, such that manufacturers may con-

form to either requirement as they choose. Standard 208 is accordingly amended by this notice; the effect of the amendment, together with the new Standard 216, is as follows:

(1) From January 1, 1972, to August 14, 1973, a manufacturer may substitute Standard 216 for the rollover test requirement in the first option of Standard 208; Standard 216 has no mandatory application.

(2) From August 15, 1973, to August 14, 1977, Standard 216 is in effect as to all passenger cars except those conforming by passive means to the rollover test of Standard 208, but it may continue to be substituted for that rollover test.

(3) After August 15, 1977, Standard 216 will no longer be a substitute for the Standard 208 rollover test. It is expected that as of that date Standard 216 will be revoked, at least with respect to its application to passenger cars.

A few comments stated that on some models the strength required in the A pillar could be produced only by designs that impair forward visibility. After review of strengthening options available to manufacturers, the Administration has concluded that a satisfactory increase in strength can be obtained without reducing visibility.

Some comments suggested that the crush limitation be based on the interior deflection of the test vehicle rather than the proposed external criterion. After comparison of the two methods, it has been concluded that a test based on interior deflection would produce results that are significantly less uniform and more difficult to measure, and therefore the requirement based on external movement of the test block has been retained.

Several changes in detail have been made, however, in the test procedure. A number of com-

ments stated that the surface area of the proposed test device was too small, that the 10-degree pitch angle was too severe, and that the 5 inches of padded test device displacement was not enough to measure the overall roof strength. Later data available after the issuance of the NPRM (Notice 4) substantiated these comments. Accordingly, the dimensions of the test block have been changed from 12 inches square to 30 inches by 72 inches, the face padding on the block has been eliminated, and the pitch angle has been changed from 10 degrees to 5 degrees.

Several manufacturers asked that convertibles be exempted from the standard, stating that it was impracticable for those vehicles to be brought into compliance. The Administration has determined that compliance with the standard would pose extreme difficulties for many convertible models. Accordingly, manufacturers of convertibles need not comply with the standard; however, until August 15, 1977, they may comply with the standard as an alternative to conformity with the rollover test of Standard 208.

A few comments objected to the optional 5,000-pound ceiling to the requirement that the roof have a peak resistance of  $1\frac{1}{2}$  times the unloaded vehicle weight. Such objections have some merit, if the energy to be dissipated during a rollover accident must be absorbed entirely by the crash vehicle. In the typical rollover accident, however, in which the vehicle rolls onto the road shoulder, significant amounts of energy are absorbed by the ground. This is particularly true in heavier vehicles. Some of the heavier vehicles, moreover, would require extensive redesign, at a considerably greater cost penalty than in the case of lighter vehicles, to meet a strength requirement of  $1\frac{1}{2}$  times their weight. At the same time, heavier vehicles generally have a lower rollover tendency than do lighter vehicles. On the basis of these factors, it has been determined that an upper limit of 5,000 pounds on the strength requirement is justified, and it has been retained.

It was requested that the requirement of mounting the chassis horizontally be deleted. It has been determined that the horizontal mounting position contributes to the repeatability of the test procedure and the requirement is therefore retained.

The required loading rate has been clarified in light of the comments. The requirement has been changed from a rate not to exceed 200 pounds per second to a loading device travel rate not exceeding one-half inch per second, with completion of the test within 120 seconds.

A number of manufacturers requested that repetition of the test on the opposite front corner of the roof be deleted. It has been determined that, as long as it is clear that both the left and right front portions of the vehicle's roof structure must be capable of meeting the requirements, it is not necessary that a given vehicle be capable of sustaining successive force applications at the two different locations. The second test is accordingly deleted.

*Effective date:* August 15, 1973. After evaluation of the comments and other information, it has been determined that the structural changes required by the standard will be such that many manufacturers would be unable to meet the requirements if the January 1, 1973 effective date were retained. It has therefore been found, for good cause shown, that an effective date more than one year after issuance is in the public interest. On or after January 1, 1972, however, a manufacturer may substitute compliance with this standard for compliance with the rollover test requirement of Standard 208.

In consideration of the above, the following changes are made in Part 571 of Title 49, Code of Federal Regulations:

1. Standard No. 208, 49 CFR § 571.208, is amended by adding the following sentence at the end of S5.3, *Rollover*: "However, vehicles manufactured before August 15, 1977, that conform to the requirements of Standard No. 216 (§ 571.216) need not conform to this rollover test required."

2. A new § 571.216, Standard No. 216, *Roof Crush Resistance*, is added, as set forth below.

This rule is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407, and the delegation of authority at 49 CFR 1.51.

Issued on December 3, 1971.

Charles H. Hartman  
Acting Administrator

36 F.R. 23299

December 8, 1971

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208

### Occupant Crash Protection

(Docket No. 69-7; Notice 15)

The purpose of this notice is to respond to petitions requesting reconsideration of the amendments to the seat belt requirements of Standard No. 208, *Occupant Crash Protection*, issued on July 2, 1971 (36 F.R. 12858, July 8, 1971). The petitions are granted in part and denied in part.

The Chrysler Corporation requested an amendment of the belt warning system requirements in S7.3, to provide that the system shall operate only when the vehicle's engine is running. Section S7.3.1 presently requires the warning to operate whenever the ignition is "on", the transmission is in a forward gear, and seat belts are not in use at occupied front outboard seats. Chrysler stated that basing the warning system operation on engine operation would permit simplification of the warning system circuitry. On review, the NHTSA has concluded that the Chrysler position has merit and that requiring warning system operation only when the engine is operating will satisfactorily include the situations in which the vehicle is likely to be in motion, and thereby satisfy the intent of the warning system requirement. S7.3.1(a) is amended accordingly.

It should be noted that a warning system that operates whenever the ignition switch is "on", in accordance with the prior version of S7.3.1(a), will continue to meet the requirement as amended, since such a system will of necessity operate when the engine is running.

Subsequent to the adoption of the passive seat belt requirement, S4.5.3 (Notice 10, 36 F.R. 12858, July 8, 1971), questions have been raised by Toyota, Renault and Volkswagen as to the configuration required of passive belts used in place of active belts. The NHTSA's intent in adopting S4.5.3 was to permit manufacturers to

substitute a Type 2 passive assembly with a detachable or nondetachable shoulder belt for any active seat belt specified under an option of S4, even though the S4 option specifies a Type 1 assembly or a Type 2 assembly with a detachable shoulder belt. The agency also intended to permit the substitution of Type 1 passive assemblies where an option does not require a Type 2 assembly. Thus a passive belt used at the front outboard seating positions to meet the third option in the period beginning January 1, 1972 (S4.1.1.3.1(a)) would have to be a Type 2 assembly. Although no formal petitions have been received on these points, it is considered advisable to amend S4.5.3 to clarify its intent.

The formal petition of JAMA with respect to S4.5.3 requested deletion of the requirement that passive seat belt assemblies must meet the assembly performance and webbing requirements of Standard No. 209. The basis for the request was JAMA's belief that the manufacturer should be allowed as much freedom in the design of a passive belt system to fit the crash characteristics of a particular vehicle as he would have in the design of other types of passive restraints. On reconsideration, the NHTSA has decided that relief from Standard No. 209 should be afforded if a passive belt is capable of meeting the occupant crash protection requirements of S5.1 in a frontal perpendicular impact and amends S4.5.3 accordingly.

The JAMA petition also requested the NHTSA to make it clear that the anchorages of a passive seat belt assembly need not meet the requirements of Standard No. 210. The installation of anchorages is required by Standard No. 210, regardless of the type restraint system in the vehicle. The NHTSA does not consider that a sufficient need has been shown at this time for amendment of

Standard No. 210. Anchorages installed pursuant to that standard are permitted to elongate, so long as they sustain the maximum required force, and such anchorages should therefore be usable in new energy absorbing belt systems.

Ford requested an increase in the minimum warning signal duration from 1 minute to 5 minutes. The NHTSA has considered a variety of alternatives in arriving at the 1-minute level, and remains persuaded that it is a reasonable compromise between the need for warning and the need to avoid undue annoyance in situations where a belt must be temporarily unfastened. The petition is denied.

JAMA requested an amendment to S7.3.3 to provide vehicles with automatic transmissions the option of shutting off the warning signal by use of the parking brake. Although this option is provided for vehicles with manual transmission by S7.3.4 as a concession to cost and lead-time problems of certain manufacturers, there are inconveniences associated with its use on vehicles with automatic transmissions, whose drivers may often prefer to use the "Park" position rather than the parking brake. The petition is therefore denied.

General Motors petitioned for an amendment of S7.3.3 and S7.3.4 to allow warning system activation when the ignition is in the "start" position. The notice issued September 29 proposed amendments to these sections that would require deactivation only when the ignition is in the "on" position. This would permit activation of the system with the ignition in the "start"

position, as requested by General Motors. No adverse comment has been received on this proposal, and favorable action will be taken in the rule to be issued pursuant to the notice of September 29.

In another request concerning S7.3.4(b), JAMA suggested an amendment to permit deactivation of the warning system whenever the parking brake lamp is illuminated. The NHTSA considers such a system to be an acceptable means of conforming to S7.3.4(b) under the present language. Since no further amendment is necessary, the petition for amendment is denied.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 208, Occupant Crash Protection, § 571.208 of Title 49, Code of Federal Regulations is amended . . .

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407, and the delegation of authority by the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on December 9, 1971.

Charles H. Hartman  
Acting Administrator

36 F.R. 23725  
December 14, 1971

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208

### Occupant Crash Protection in Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses

(Docket 69-7; Notice 16)

The purpose of this notice is to amend Standard No. 208, Occupant Crash Protection, as proposed September 29, 1971 (36 F.R. 19266, October 1, 1971) with respect to the occupant protection options available between August 15, 1973 and August 15, 1975. The amendments proposed on September 29 are adopted essentially as proposed, with minor modifications.

The notice proposed a third occupant protection option (S4.1.2.3) for passenger cars manufactured between August 15, 1973 and August 15, 1975. The salient feature of the new option was the use of seat belts equipped with an ignition interlock system that would prevent the engine from starting if any front seat occupant did not have his belt fastened. The belts at the front outboard positions would have to meet the injury criteria of the standard in a 30 m.p.h. frontal barrier crash, and any lap belt in the center position would have to remain intact in the same crash. If shoulder belts were provided at the front positions, they would have to be nondetachable and have emergency locking retractors. Additional features of the interlock system as specified in S7.3.5 included an antidefeat measure that would require the belt to be fastened *after* the occupant is seated, a requirement that unfastening the belt would not stop the engine, and a provision for seat belt warning system operation when the ignition is in the "start" position and a belt is unfastened at an occupied front seat position. With minor exceptions noted in the following discussion, the option is adopted as proposed.

Several comments approved of the interlock option. Mr. Ralph Nader and the Center for Auto Safety raised procedural objections con-

cerning the issue of placing intragovernmental communications in the docket. This issue is presently the subject of litigation in the Federal Courts, and would not be appropriate for discussion herein. The Center also objected that both the interlock option, to begin August 15, 1973, and the passive restraint requirement, beginning August 15, 1975, should be instituted one year earlier. The option that includes the interlock system also requires emergency-locking shoulder belt retractors, however, and the agency has determined that the 1974 model year is the earliest practicable time by which the option can be effectuated. As for the passive restraint requirement to become effective on August 15, 1975, the reasons for setting that effective date were discussed at length in Notice 12 (36 F.R. 19254, October 1, 1971), and need not be restated here.

There were differences of opinion among the comments on the desirability of various other aspects of S4.1.2.3. The requirement of greatest concern appears to be S4.1.2.3(b), which requires the injury criteria to be met at the front outboard positions in a 30-mph frontal barrier crash with the test dummy restrained by the seat belt. It was the intent of the proposal to allow another means of providing the requisite level of occupant protection, not to lower the level of protection. Present information indicates that systems meeting the injury criteria are available using current seat belt technology, and the agency therefore adopts the requirement as proposed.

To allow greater diversity in belt system development, it has been decided to accept the suggestion made in a number of comments that conformity to Standard No. 209 should not be

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required of belt systems that meet the injury criteria. Accordingly, those options that require a seat belt to meet the injury criteria (S4.1.1.2, S4.1.2.2 and S4.1.2.3) are amended by limiting the application of Standard No. 209 to belts other than those meeting the injury criteria. A belt provided at a center front position is not required to meet the injury criteria and is therefore required to conform to Standard No. 209.

Related requests for exemption from the anchorage requirements of Standard No. 210 have not been adopted in that they appear to be unnecessary. An amendment to permit anchorages that absorb energy by elongating under force is not necessary, since Standard No. 210 expressly permits deformation so long as the maximum force is sustained. In the absence of other data indicating a need to amend Standard No. 210, no change is proposed in that standard.

Chrysler's suggestion that a shoulder belt shaped as an inverted Y could be used in lieu of a nondetachable upper torso belt has not been adopted, primarily because of the likelihood that it would often go unused. There is nothing to prevent a manufacturer from installing such a belt along with the lap belt, so long as the lap belt alone is capable of meeting the injury criteria.

The interlock requirements were the subject of diverse comments. Some generally endorsed the requirement for interlock at all front positions, some stated that it should not be required at any position, while others suggested that it should be installed only at the outboard seats or only at the driver's seat. Several comments indicated doubts as to the system's reliability and expressed concern about its possible interference with vehicle operation.

Upon review of the comments, the NHTSA has decided to adopt the interlock system as an option applying to all front seating positions. The 1973 options, whether active or passive, are intended to set minimum protection requirements for all front seating positions. If the third option is to give protection better than that of present belt systems, belt usage must be increased. The interlock system has the potential to increase belt usage and is therefore adopted as part of the third option. Exemption of the center

front seat, as proposed by several comments, could result in increased occupancy of the center seat as an easy means of avoiding the effects of the interlock system. The effect of such avoidance would be to substantially lessen the protection afforded occupants, and the requests for center seat exemption are therefore denied. However, in consideration of some technical problems arising from the placement of sensors in the center seats, it has been decided to change the preconditions for warning system and interlock system operation. It was pointed out that the center seat cushion may be depressed far enough to activate the warning signal by the weight of two large men in the outboard positions. To alleviate this problem, S7.3.1(c), S7.3.5.2(b), and S7.4.1(b) are changed to provide for activation by the weight of a child in the front non-driver positions only when a 50th percentile adult male is seated in the driver's position.

Other problems of convenience arising from the interlock system are dealt with by the addition of two new subsections to S7.4. As a convenience in situations such as parking garages or vehicles stalled in traffic, a new S7.4.3 has been adopted, permitting restarting of the engine within three minutes of shutoff without interference by the interlock system. To facilitate repair and maintenance work, a new S7.4.4 is adopted to permit the interlock to be overridden by a switch that is actuated after opening the cover of the engine compartment. To reduce the possibility that the engine compartment switch will be misused, S7.4.4 provides that the switch will not defeat the interlock unless it is operated after each period of engine operation.

The requirements of S7.3.3 and S7.3.4 have been amended by adding engine operation as a necessary condition for mandatory warning system shutoff. This limits the situation in which the system must not operate; it may now operate when the ignition is in the "start" position, as requested by General Motors.

The relationship of the "start" position to system operation is also affected by the interlock system requirements. S7.3.5.4 requires the warning system to operate when the ignition is in the start position to tell the driver of a vehicle with unbelted front seat occupants why the engine fails to start.

One additional feature of the belts used in interlock systems attracted considerable comment. The amendment to S7.1.1 that would require shoulder belts provided under S4.1.2.3 to have emergency-locking retractors has been adopted as proposed. The NHTSA regards the convenience of an emergency-locking retractor as a significant incentive for belt usage. In response to comments requesting an interpretation as to the number of retractors required, the standard permits a system with a single emergency-locking retractor acting on both lap and shoulder belts. In response to requests for allowance of auxiliary manual adjustment devices, such devices are permissible if they cannot be adjusted so as to cause the belt to fail the automatic adjustment requirements of Standard No. 208.

General Motors raised a question concerning the number of test devices to be used in the frontal barrier crash test specified in S5.1. The NHTSA has interpreted the section as requiring test devices only in those seating positions for which a barrier crash test is specified by S4.

The question is of general interest and is considered significant enough to warrant a clarifying amendment to S5.1 at this time.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 208, Occupant Crash Protection, § 571.208 of Title 49, Code of Federal Regulations is amended. The standard is hereby amended upon publication of this notice in the *Federal Register*; effective dates are as stated in the text of the standard.

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407, and the delegation of authority by the Secretary of Transportation to the National Highway Traffic Safety Administrator, 49 CFR 1.51.

Issued on February 17, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 3911**  
**February 24, 1972**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208****Occupant Crash Protection—Pressure Vessels and Explosive Materials****(Docket No. 69-7; Notice 18)**

The purpose of this notice is to add a new section to Motor Vehicle Safety Standard No. 208, *Occupant Crash Protection*, 49 CFR § 571.208, dealing with pressure vessels and explosive devices.

After review of the comments to the notice of proposed rulemaking (Docket 69-7, Notice 14, October 9, 1971; 36 F.R. 19705), the agency has concluded that its original assessment of the need for regulation was essentially correct and that a regulation should therefore be adopted. As indicated in Notice 14, the NHTSA sees a regulation of restraint systems such as air bags containing explosive materials or pressure vessels as having two primary functions: to impose directly on manufacturers the obligation to conform to Federal hazardous materials regulations, and to create a uniform system of regulation that will override any conflicting state or local regulation.

The approach taken in the notice was to propose a general incorporation of all applicable portions of the hazardous materials regulations as found in 49 CFR Parts 170-189. Most of the comments, while agreeing with the general intent of the proposal, objected to the breadth of this incorporation as too vague and too likely to result in difficulties of interpretation. There was a consensus that serious problems would arise as a result of the Hazardous Materials Regulations Board's practice of issuing special permits that allow shipment of regulated items that do not conform to the regulations. The majority of devices used in occupant protection systems vary in some way from the requirements of the regulations and have been shipped under one or more special permits. The comments pointed out that adoption of the regulations

without some adjustment to allow for the existence of special permits would effectively prohibit most of these devices.

It has therefore been decided to limit the incorporation of the HMRB regulations by referencing those parts of the regulations from which no variances have been granted. Without exception, the pressure vessels used in air bag systems to date have been manufactured in basic conformity with the recently adopted Specification 39 (49 CFR 178.65). The variances which have caused the manufacturers to obtain special permits have been variances in the choice of materials and in the method of fabrication. All cylinders have been able to conform to the basic performance requirements of the specification, so that an incorporation into Standard 208 of the performance requirements of Specification 39 would enable manufacturers to continue to make their present systems.

Taken together, the performance requirements are considered by the NHTSA to be an adequate regulation of the safety of pressurized containers in occupant restraint systems. The HMRB will continue to exercise its jurisdiction over the shipment of the systems, so that a manufacturer will still have to obtain a special permit in order to ship systems that do not conform to the specification. The adoption of section S9 is not intended in any way to diminish the responsibilities of a manufacturer under the applicable regulations of the HMRB. For example, evidence of the requisite number of tests and inspections will continue to be required for shipment under the HMRB regulations, even though failure to test and inspect will not be a violation of Standard 208.

As adopted, the section consists of two subsections, the first dealing with pressure vessels and the second with explosives. The pressure vessel subsection applies to vessels that are designed to be continuously pressurized, as distinguished from systems that are pressurized only during actuation. A pressure vessel that contains an explosive charge as well as gas under continuous pressure will have to conform to both subsections.

A continuously pressurized vessel is required to conform to the requirements of Specification 39 concerning type, size, service pressure, and test pressure of vessels (paragraph 2 of the Specification); seams (6(b)); wall thickness (7); openings and attachments (9(a) and (b)); safety devices (10); pressure tests (11); and flattening tests (12). The reference to the latter two paragraphs are drafted to make it clear that the quality control aspects of those paragraphs are not included in the standard. The remaining portions of Specification 39, including the inspection requirements of paragraphs 3, 4, and 15, the material specifications of paragraph 5, the rejected cylinder procedure of paragraph 13, and the markings requirement of paragraph 14, are not incorporated.

Review of the explosives provisions of the hazardous materials regulations showed that some of the requirements, if applied literally, would not be appropriate for automotive installations. For instance, certain types of pyrotech-

nic inflators are categorized as explosive power devices and are required to be shipped in fiberboard or wooden containers. Neither of these types of containers would be proper for a system designed to protect occupants in a vehicle from the effects of a crash. The primary needs are for a requirement that sets limits on the sensitivity of the explosive and one that requires it to be in a container that will protect the occupants of the vehicle from the effects of inadvertent ignition. These requirements are hereby adopted, in accordance with comments made by General Motors.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 208, Occupant Crash Protection, 49 CFR § 571.208, is amended. . . .

*Effective date:* June 12, 1972. Because of the immediate need to establish a uniform system of regulation, good cause is found for an effective date sooner than 180 days after issuance.

This amendment is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407 and the delegation of authority at 49 CFR 1.51.

Issued on May 3, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 9222**  
**May 6, 1972**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208

### Occupant Crash Protection

(Docket No. 69-7; Notice 19)

The purpose of this notice is (1) to adopt the method of calculating head injury proposed in Notice 17 of Docket 69-7 (37 F.R. 5507) as an amendment to S6.2 of Motor Vehicle Safety Standard No. 208, Occupant Crash Protection, 49 CFR § 571.208, and (2) to respond in part to petitions for reconsideration of the amendments to the standard published in Notice 16, February 24, 1972 (37 F.R. 3911). The issue involving Notice 16 addressed by this notice is the applicability of the head injury criterion of S6.2 to seat belt restraint systems. Action on the remaining issues has been scheduled for completion not later than July 1, 1972.

#### *I. Calculation of head injury criterion.*

Some substantive objections were raised to the proposed method of calculating the head injury criterion. Several comments questioned the use of resultant accelerations rather than the anterior-posterior accelerations used in the original development of the Wayne State University Tolerance Curve. Although the curve was originally based on anterior-posterior acceleration data, its validity for resultant accelerations appears to be confirmed by subsequent tests using resultant accelerations computed from biaxial accelerometers. Resultant accelerations have therefore been used in the amended criterion.

The question of the permissible level was again raised, with some commenters supporting a level of 1500 even under the revised method of calculation. This agency's position is that adequate justification has not been demonstrated for a numerical increase in the severity level, although adjustments in the method of calculation adopted herein may have the effect of allowing greater cumulative accelerations than would have been allowed under the Gadd Severity Index. With

the new calculation, the higher numerical level is less supportable than before and it is accordingly rejected. The amendment to S6.2 is adopted as proposed.

#### *II. Applicability of the head injury criterion to seat belt systems.*

The decision to postpone the date of mandatory installation of passive restraints until August 15, 1975, was made in consideration of the hardship that would have been imposed on many manufacturers by a requirement to provide passive restraints by the original date of August 15, 1973. The injury criteria of the standard, measured in a barrier crash with instrumented dummies, were applied to belt systems as well as passive systems that might be used to meet the requirements of the standard, beginning August 15, 1973.

Several manufacturers have petitioned for the removal of the injury criteria, particularly those for head injury, from the belt system tests. Their concern arises from their test results indicating that in many vehicles currently available belt systems either do not meet or only marginally meet the head injury criteria. They have argued that much, perhaps most, of the acceleration that contributes to the head Severity Index measurement with a shoulder-belted dummy occurs as the head flops loosely forward without striking anything in the vehicle. Actual field collision data, they maintain, does not indicate that this type of head movement by shoulder-belted vehicle occupants in a crash is a serious injury-producing factor. They question the correlation between results of the dummy tests and the actual protective characteristics of the belt systems.

The NHTSA recognizes the uncertainty concerning the significance of head movement by a shoulder belted occupant whose head does not

strike the forward part of the vehicle, although it considers the present evidence too scanty to be conclusive in either direction. It also recognizes that the leadtime for any major design or component changes for the 1974 models has been virtually exhausted. Recent materials submitted to the docket indicate that presently existing inflatable restraint systems can meet the head injury criteria with little difficulty. The inherent limitations in lap-and-shoulder-belt systems make it considerably more difficult for those systems to meet these criteria, although belt systems have been found to provide protection at moderate speeds.

For these reasons, it has been decided that a temporary modification in the head injury measurements for belt systems is justified. The amendment made by this notice in response to the petitions affects vehicles manufactured before August 15, 1975, and provides that measurement of head acceleration begins, for purposes of computing the head injury criterion for belted dummies, only at the moment at which the head strikes some portion of the vehicle other than a belt. The measurement will thus include any contact with the windshield or dashboard, for example, or the effects of rebound against the seat back, but pre-impact accelerations of the head will be excluded.

This agency will examine closely the accident data bearing on the traumatic effect of non-

impactive head accelerations, as well as such laboratory data as may be gathered, for example from cadaver studies. Work is also in progress concerning the correlation between dummy and human behavior, with a view to more sophisticated instrumentation and measurement of vehicle performance, and to continued evaluation of the head injury criterion for the entire test crash event.

In consideration of the foregoing, paragraph S6.2 of Motor Vehicle Safety Standard No. 208, Occupant Crash Protection, 49 CFR § 571.208, is amended. . . .

*Effective date:* July 24, 1972.

Because this amendment modifies an existing rule in a manner that imposes no additional substantive requirements, it is found for good cause shown that an effective date less than 180 days from the date of issuance is in the public interest.

Issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407, and the delegation of authority at 49 CFR § 1.51.

Issued on June 20, 1972.

Douglas W. Toms  
Administrator

37 F.R. 12393  
June 23, 1972

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208****Occupant Crash Protection in Passenger Cars,  
Multipurpose Passenger Vehicles, Trucks and Buses****(Docket No. 69-7; Notice 20)**

The purpose of this notice is to respond to petitions for reconsideration of the seat belt interlock requirements of Motor Vehicle Safety Standard No. 208, Occupant Crash Protection, 49 CFR § 571.208, as published February 24, 1972 (37 F.R. 3911). The issues in the petitions relating to the applicability of the head injury criterion of S6.2 to seat belt systems have been answered in a notice published June 24, 1972 (37 F.R. 12393). The remaining issues are discussed herein.

Several petitions raised issues which, while of considerable importance, lie outside of the immediate scope of the notice under review. Among these are requests to exempt vehicles that meet the injury criteria from the requirements of Standards Nos. 201, 203, 204, and 212, and to waive some of the requirements of Standard No. 209 relating to the width and elongation of webbing. As indicated in the Program Plan for Motor Vehicle Safety Standards, several of these matters are under review at the present time. Their resolution will await the issuance of rule-making notices in the respective dockets.

General Motors reiterated its opposition to the requirements for rollover protection and for the protection of rear seat occupants by passive means. Although these issues may be affected by the receipt of additional information, the NHTSA has not found sufficient cause to alter its position.

With respect to the interlock option itself, the petitioners objected less to the concept of such a system than to the positions at which it would have to be installed and to the level of protection required of it. Some requested an indefinite

extension of the interlock requirements beyond August 15, 1975, as a more or less permanent substitute for passive protection. Inasmuch as the NHTSA continues to consider the 1975 date to be a reasonable date for the installation of passive systems, it must again deny the requested delay.

The application of the interlock and belt warning systems to the center front seating position drew a number of adverse comments. It was stated that the center seat occupancy rate was too low to justify the added cost of installing the system and that the system would be prone to inconvenient activation, as when two large men at the outboard positions depress the center seat cushion. On the question of cost effectiveness, the agency has found that the available data do not support the petitioners. Despite the relatively low occupancy rate, the incremental cost of installing the system is low enough to create a favorable ratio. The requirement for center seat installation is therefore retained. To avoid the problems of over-sensitivity, it has been decided to raise the threshold weight at which activation is required, in accordance with a suggestion by American Motors. The relevant sections (S7.3.5.2(b) and S7.4.1(b)) are accordingly amended to refer to a 5th-percentile adult female rather than to a 50th-percentile 6-year-old child.

The petitions directed their strongest objections to the application of the injury criteria to belt systems. Partial relief has been granted to belt systems with respect to the head injury criterion. The chest and femur criteria, to which a lesser amount of criticism has been directed,

are not considered to present the same level of difficulty for belt systems of current design as the head.

However, it has been decided to make an interim adjustment of the chest injury criterion with respect to seat belts by applying to them a criterion using the severity index formerly applied to the head. The effect of this is to ease the requirement somewhat without permitting excessive long duration accelerations. A well designed belt system of the current types will be capable of meeting the revised criterion. It is expected that improvements now in prospect will allow belt systems to meet the 60 "g's", 3 milli-second criterion in 1975. Femur loads are not a problem for seat belt systems that do not separate during impact, and the femur criterion is therefore retained.

Ford stated in its petition that two barrier tests would be required under S4.1.2.3(d) and (e) for some vehicles, due to the difficulty of placing three 50th-percentile male dummies in the front seat. Although it may be that correct placement cannot be made in Ford vehicles, Ford is at liberty to devise a method of testing the center position which imposes a stress on the belt system equivalent to that of a 50th-percentile adult male. It does not appear that the size of the dummies will prevent most cars from being tested with the dummies three abreast, if the manufacturers elect to conduct S4.1.2.3.1(d) and (e) as a single test. Ford's petition is therefore denied.

General Motors, alone among the petitioners, suggested the use of a sequenced warning system in place of the interlock system. In part the company's position was grounded on the belief that the standard presently requires a sequenced warning and that the interlock is therefore a redundant system. In fact, the opposite is true under the present wording of the standard, in that S7.3.2 states that the warning system shall not operate when the belt is extended to a specified length or, alternatively, when the belt is buckled. Because a sequential warning system would necessarily cause the signal to operate in some situations despite the belt's being extended or buckled, it would not be allowed under S7.3.2.

In response to the GM request to substitute the sequenced warning for the interlock, the NHTSA has concluded that the interlock coupled with a nonsequenced warning provides a somewhat more direct incentive to belt usage with less potential for causing irritation while the vehicle is in operation. The interlock feature is therefore being retained. However, in the light of GM's expressed preference for a sequential warning and in response to a petition by the Japan Automobile Manufacturers Association to permit sequential operation of the warning, it has been decided to amend S7.3.2 to permit manufacturers to use a sequenced warning in conjunction with the interlock system.

The Japan Automobile Manufacturers Association requested the addition of the phrase "after the seat has been occupied" to S7.3.2(a) and (b). Because this would have the effect of requiring all warning systems to be sequenced, paragraphs (a) and (b) are not being amended. Instead, a new paragraph (c) is being added as a third mode of warning system shut off. Although by its terms the new paragraph applies only to front outboard positions, S7.3.5.3 will operate on it as on the other paragraphs to apply it to the center front position as well.

It should be pointed out that a manufacturer adopting the sequential option will be free to incorporate anti-bounce features into the system to prevent its being knocked out of sequence when the occupant lifts off the seat momentarily. This is so because under S7.3.1 the warning system is required to operate only when the belts have not been extended or buckled. If the occupant, in moving about on the seat, does not unbuckle or retract the belt, the warning would not be *required* to operate and the manufacturer could therefore provide for nonoperation in such situations.

Toyota has requested the application of S7.4.3 and S7.4.4 to the warning system as well as the interlock. Because of the possibility that such an amendment would result in the warning system's activating unexpectedly while the vehicle is in motion, the petition is denied.

Several petitions addressed the convenience features of the interlock system in S7.4.3 and S7.4.4. Chrysler stated that it understood the

reference in S7.4.3 to "after the engine has been stopped" to mean after the ignition has been turned off, so that a stalled engine could be restarted indefinitely so long as the ignition is not turned off. This interpretation is essentially correct. The quoted phrase refers to the act of stopping the engine, rather than to involuntary engine stoppage. However, to make it clear that the engine may be restarted indefinitely if the engine has not been turned off, the section is being amended to make its intent explicit.

General Motors stated that it would be desirable for the engine starting system to be operable indefinitely without interference from the interlock system after the engine is stopped so long as the driver has not left his seated position. Such a provision would be an alternate means of permitting restarting in emergency road situations and it is therefore being adopted as part of S7.4.3.

As amended S7.4.3 continues to refer to starting after the engine has stopped, to make it clear that the features of S7.4.3 will not interfere with the primary function of the interlock system. Although it is not necessary for the engine to operate under its own power, the engine starting system must at least be operated in a manner that would start a functional engine in order for the convenience features to have any effect.

A related issue arises in the context of S7.4.4, which refers to restarting "after each period of engine operation." Chrysler interprets this to mean the cycling of the ignition switch from "off" to "on" to "off" again. Although the lan-

guage does not support this meaning, on reconsideration it has been decided that there are advantages to an engine compartment switch that does not require the engine to rotate in order to be reset. The section is therefore being amended to refer to the cycling of the ignition switch rather than to engine operation.

The requirement that the switch be operated each time in order to permit engine starting is being retained despite the request of several petitioners for a system that would permit unlimited restarting so long as the hood is open. The agency's primary objection to such a system is that it is too easy to override permanently. The system allowed by S7.4.4 may be somewhat less convenient, but it is also less defeatable and is therefore preferred. The switch may be located so that it will be operable by the raising of the hood, as requested by several petitioners.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 208, Occupant Crash Protection, 49 CFR § 571.208, is amended. . . .

*Effective Date:* 180 days after publication in the *Federal Register*.

Issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. § 1392, 1407, and the delegation of authority at 49 CFR § 1.51.

Issued on June 30, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 13265**  
**July 6, 1972**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208**

**Occupant Crash Protection in Passenger Cars,  
Multipurpose Passenger Vehicles, Trucks and Buses**

**(Docket No. 69-7; Notice 22)**

The purpose of this notice is to specify the effective date for the amendment to Motor Vehicle Safety Standard No. 208 published July 6, 1972, (Notice 20; 37 F.R. 13265). In the effective date provision of the notice, it was stated that the amendment became effective 180 days after publication in the *Federal Register*. Calculation of 180 days from July 6, 1972, the publication date, results in an effective date of January 2, 1973. For reasons of consistency and clarity, it has been found preferable to establish January 1, 1973, as the effective date.

The amendment to Motor Vehicle Safety Standard No. 208, 49 CFR 571.208, published at

37 F.R. 13265 is therefore made effective January 1, 1973.

Issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407, and the delegation of authority at 49 CFR 1.51.

Issued on August 3, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 16186  
August 11, 1972**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208

### Occupant Crash Protection in Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses

(Docket No. 69-7; Notice 23)

The purpose of this notice is to reply to petitions filed pursuant to 49 CFR 553.35 requesting reconsideration of the requirements of Motor Vehicle Safety Standard No. 208 relating to seat belts in vehicles manufactured after August 15, 1973, as amended by Notices 19 and 20 of Docket 69-7 (37 F.R. 12393; 37 F.R. 13265).

1. *Seat belts and the injury criteria of S6.* The primary objection raised by petitioners is that Notices 19 and 20 did not altogether revoke the requirement that seat belts used to meet the 1973 interlock option must be capable of meeting the injury criteria of S6. Although review of the petitions suggests that additional modification of the head injury criterion is advisable, the NHTSA declines to grant petitioners' request for complete relief from the injury criteria.

Review of the petitions for reconsideration of Notice 16 showed that belts would have difficulty meeting the full criteria. Since leadtime was insufficient for major design changes in belts before 1973, it was found necessary either to remove the injury criteria or modify them so that the changes needed to enable belts to conform could be made in 1973.

Upon review, it was concluded that the injury criteria, even in modified form, would have the beneficial effect of regulating the overall protection characteristics of the occupant compartment and belt system. Regulation of the seat belt as a separate component, as in Standard 209, does not insure that the belt will be installed in a manner calculated to insulate the occupant from injurious contact with the interior of the vehicle. It was therefore decided to retain the injury criteria, with such modifications as seemed neces-

sary to allow manufacturers to conform to S4.1.2.3 by August 15, 1973.

The most significant, though by no means the only, agent of head injury is impact with the vehicle interior. In reviewing the petitions on Notice 16, it was decided that no interim criteria would be acceptable that disregarded any impact-related accelerations. Notice 19 therefore amended the head injury criterion in a manner that was intended to include all impact accelerations and to disregard the effect of non-impact accelerations. As several petitioners point out, however, the amendment did not fully carry out this intent. S6.2, as amended, would have disregarded only those accelerations occurring before the head impacted the vehicle and would have counted all accelerations after that point. One effect of this formula was that a glancing impact, in itself insignificant, would cause all subsequent non-impact accelerations to be counted even though such accelerations would not be distinguishable in kind from the pre-impact acceleration. To avoid this result, the agency has decided to include in the calculation of the head injury criterion only those accelerations that occur while the head is in contact with the vehicle.

Some petitioners suggested that even while the head is touching the vehicle, a significant part of the head's deceleration is due to the restraining action of the belt and not to the surface the head strikes. Although there is undeniably more than one force that contributes to head deceleration, the force produced by the impacted surface becomes increasingly important as the duration of the impact increases. If the accelerations during an impact are of such an

amplitude and duration that a HIC value of 1,000 is approached, the acceleration caused by the belt is generally insignificant. The criterion therefore counts all accelerations during the impact phase.

The chest injury criterion of S6.2 was modified for seat belts by Notice 20, which substituted a severity index of 1,000 for the 60g 3 millisecond criterion applied to other restraint systems. Although the use of the severity index as an indicator of chest injury has not been common practice, the agency has decided that it provides a reasonable interim measure of the effectiveness of the belt system. The severity index of 1,000 is therefore retained as the criterion for belt systems until August 15, 1975.

2. *Passive belts and injury criteria after August 15, 1975.* Several petitioners stated that any relief granted to seat belts in the period 1973-1975 should be extended to passive belt systems in the period beyond 1975. However, the NHTSA adopted the interim criteria out of consideration for lead time problems, not because it considered them to be fully satisfactory. The agency does not consider any criterion to be acceptable, on a permanent basis, that omits potentially injury-causing accelerations from its computation. Even though impact accelerations may be the major threat to belted occupants, the effects of non-impact accelerations are not negligible and should not be ignored. It is expected that belts will be able to meet the full injury criteria by 1975. The petitions requesting extension of the modified criteria beyond 1975 are therefore denied.

3. *MPV's and trucks manufactured before August 15, 1977.* The adoption of the interlock option for passenger cars under S4.1.2.3 permitted multipurpose passenger vehicles and trucks of less than 10,000 pounds GVWR to continue to use belt systems (with interlocks) in the period between 1975 and 1977. The agency's intent was to permit these vehicles to have the same interlock system during 1975-1977 that is permitted for passenger cars during 1973-1975. In response to several petitioners, who pointed out that S6.2 and S6.3 could be understood to require these vehicles to meet the full injury criteria during this period, the sections are hereby amended to extend the injury criteria modifications until August 15, 1977, for MPV's and trucks of less than 10,000 pounds GVWR.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 208, Occupant Crash Protection, 49 CFR 571.208, is amended. . . .

Effective date: August 15, 1973.

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407, and the delegation of authority at 49 CFR § 1.51.

Issued on October 18, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 22871**  
**October 26, 1972**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208

### Occupant Crash Protection

(Docket No. 69-7; Notice 25)

The purpose of this notice is to amend the injury criteria specified for the chest and femur under sections S6.3 and S6.4 of Motor Vehicle Safety Standard No. 208, Occupant Crash Protection, 49 CFR 571.208. The amendments adopted hereby are those proposed in a notice of proposed rulemaking published on October 28, 1972 (Notice 24; 37 F.R. 23115).

The injury criterion for the chest is amended with respect to all vehicles manufactured before August 15, 1975, by substituting a severity index value of 1,000 as the measure of injury potential in place of the criterion of 60g's for 3 milliseconds. The substitution had previously been made for vehicles equipped with seat belt systems manufactured before August 15, 1975. The amendment made hereby is based on a finding that the severity index is an acceptable interim measure for restraint systems other than belt systems.

Several comments noted an oversight in Notice 24 concerning the application of the modified chest criterion to multipurpose passenger vehicles and trucks having GVWR's of 10,000 pounds or less. As a result of a previous notice (Notice 23; 37 F.R. 22871, October 26, 1972), these vehicles had been permitted to meet the modified criterion until August 15, 1977. Notice 24 failed to reflect this change. The omission has been corrected in the amended version of S6.3, and a parallel extension has been made for vehicles other than passenger cars that have restraint systems other than belts.

The injury criterion for the upper legs is amended to specify a maximum force of 1700 pounds on each femur rather than the previously

specified force of 1400 pounds. The new requirement is considered to provide a good level of protection in crashes in the 30 m.p.h. range and allows manufacturers greater latitude in designing systems for protection at higher speeds.

None of the comments disagreed with the proposal for an increase in force level, although the Ford Motor Company suggested a further amendment that would permit higher forces for a cumulative interval of not more than 3 milliseconds, thereby disregarding extremely short period acceleration peaks which Ford considers to be artificial products of the dummy's metallic structure. A similar request has been made by General Motors in a recent petition for rulemaking. The agency has not yet completed its evaluation of this issue. If favorable action is decided upon, a notice of proposed rulemaking will be issued to permit additional comment.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 208, Occupant Crash Protection, 49 CFR 571.208, is amended . . .

Because this amendment relieves a restriction and imposes no additional burden, an immediate effective date is found to be in the public interest.

*Effective date:* November 23, 1972.

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407, and the delegation of authority at 49 CFR 1.51.

Issued on November 20, 1972.

Charles H. Hartman  
Acting Administrator

**37 F.R. 24903**

**November 23, 1972**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208

### Seat Belt Interlock Amendments

(Docket No. 69-7; Notice 27)

The purpose of this notice is to amend the seat belt interlock requirements of Motor Vehicle Safety Standard No. 208 (49 CFR § 571.208). The amendments relate to the performance requirements applicable to the belts, the positions at which the interlock is to be provided, and the convenience features allowed in certain driving situations.

The amendments adopted hereby were initially proposed in a notice published April 20, 1973 (Docket 69-7, Notice 26; 38 F.R. 9830). Some of the amendments proposed in Notice 26 have been adopted in revised form as a result of the comments. One proposal, concerning an alternative interlock system, is not adopted by this notice and awaits further rulemaking action as discussed below.

*I. Amendments.* In Notice 26, it was proposed to amend Section S4.1.2.3, the section establishing the seat belt interlock option, by deleting the requirement that the belts in the front outboard positions meet the injury criteria of S5.1 and by deleting the requirement that the belt at the center front position meet a breakage test in a barrier crash. It was also proposed to delete the requirement for an interlock at the center front position.

Subject to continuing reservations about the interlock system itself, the comments were generally favorable to the proposed amendments. The mandatory requirements for meeting the injury criteria at the outboard positions and the breakage test at the center front position are hereby deleted, as proposed.

There were objections to certain details of the proposal. Under the injury criteria version of S4.1.2.3, manufacturers were allowed to install either Type 2 seat belts (lap and shoulder belt

combinations) or Type 1 seat belts (lap belt). Without the injury criteria as a control on the performance of the lap belt, it was proposed in Notice 26 to delete the Type 1 belt option under S4.1.2.3.1(a). Ford Motor Company stated that if Type 1 belts were not permitted, evaluation of systems employing lap belts in conjunction with passive upper torso restraint would be inhibited. Although belts may be used with passive restraints under the second restraint option in 1973 (S4.1.2.2), second option systems must be capable of providing fully passive protection in a frontal crash. To permit evaluation of systems that may not have full passive capability, it has been decided to continue to permit Type 1 belts under the third option (S4.1.2.3(a)) on the condition that they are capable of meeting the injury criteria of S5.1 in a frontal perpendicular crash.

As amended, therefore, S4.1.2.3.1(a) provides that at the front outboard positions a manufacturer may install either a Type 2 seat belt assembly that conforms to Standard No. 209, or a Type 1 seat belt assembly that meets the injury criteria of S5.1. Insofar as the injury criteria themselves are contingent upon the establishment of an adequate method of measurement through the adoption of a new test dummy, a manufacturer who intends to produce vehicles with Type 1 belts at the front outboard positions will have to await the adoption of the new dummy regulation and its incorporation into the options under S4.1.2.

The proposed deletion of the interlock requirement for the center front position (S4.1.2.3.1(b)) was favorably received, and the requirement is hereby deleted. It was stated by Ford, Chrysler, and American Motors that the warning system at that position should also be deleted. The

merits of the warning system at the center position, in the form of increased belt usage, are considered by NHTSA to outweigh its drawbacks. Although it is fair to say that the warning system will be somewhat more likely to fail with three sensors in the system than with two sensors, the agency does not consider the increment to be sufficient to justify deleting the warning system. The temporary difficulties that Chrysler and American Motors will experience in the severance of the interlock from the warning system are also not considered sufficient grounds for deletion of the warning system. Section S4.1.2.3.1(b) is therefore adopted as proposed in Notice 26. The remaining provisions of S4.1.2.3 were not objected to, and are also adopted as proposed.

A request to clarify section S7.4.1, by amending the second sentence of the section to refer to "each occupied front outboard seating position," has been favorably considered and is adopted hereby.

An amendment to S7.4.3 was proposed to allow an additional "free-start" mode, whereby the manufacturer could install a timer that would be actuated by the seat switch and that would allow the vehicle to be started without belt operation within a period of up to three minutes after the driver leaves his seat. Reaction to the proposal was favorable. In particular, the National Parking Association indicated that such a provision would alleviate most problems in the parking of cars in garages. The amendment is being adopted as proposed.

The proposed addition of section S7.4.5 proved unexpectedly controversial, due to an apparent divergence of opinion on the question of whether, without S7.4.5, a seat bounce switch would be permitted for the interlock system. It has been the opinion of NHTSA that the interlock requirements do not permit the starter to operate in the event that a person who has operated the belt in the correct sequence gets off the seat and returns to it before attempting to start the car. The majority of manufacturers construed the interlock requirements as permitting operation in the situation just described, and had therefore designed their systems with seat bounce switches. Rather than appearing permissive, as intended,

the 10 second bounce switch proposed by S7.4.5 was therefore seen by most manufacturers as unduly restrictive.

Upon consideration of the comments, the agency has concluded that the predominant varieties of bounce switch described by the comments can be accommodated by a modest revision of the section. Two main types of switch were described, one involving a timer set for intervals of from ten seconds to a minute and a half or more, and the other involving the door switches in the circuit, so that after being correctly sequenced the system would allow the car to be started despite "bounces" of any duration, so long as the doors have not been opened. As adopted, the section permits a manufacturer to choose either system. If he chooses a timed system, he may allow any time up to three minutes. Each of the varying time periods described in the comments would therefore be allowed.

The proposed alternative interlock system, S7.5, was treated favorably or neutrally in the comments, although none indicated plans to adopt such a system. The agency continues to regard the alternative system favorably, but on review of the comments has concluded that there is merit to the suggestion that the convenience features established for the primary interlock system should also be applied to the alternative system. In addition, it appears desirable to incorporate a requirement for warning system operation similar to that of S7.3.5.4 to tell a driver who has not operated his belt why the car cannot be moved. Final action on the proposed S7.5 is therefore being delayed in order to obtain comments on additional features of the system that are to be proposed in an upcoming notice.

II. *Other related matters.* After the publication of Notice 26, several comments and petitions were received on the subject of seat belts and the seat belt options. In its comment to Notice 26, Toyota restated its earlier request for amendment of Standard 209 to permit narrower webbing for portions of the belt that do not touch the occupant. Favorable action on this request is proposed in a notice published in today's edition of the *Federal Register* (38 F.R. 12414).

In a petition for rulemaking submitted May 15, 1973, Nissan Motor Company requested an

amendment of the seat belt option that is in effect until August 15, 1973 (S4.1.1.3). The option presently requires all front outboard seat belts to meet a breakage test in a 30 mph barrier crash (S4.1.1.3(c)). Nissan stated that the finding in Notice 26 that the breakage test does not contribute significantly to the strength of the belt should be extended to belts in vehicles manufactured before August 15, 1973, as well as to belts in vehicles manufactured after that date, and that S4.1.1.3(c) should be deleted accordingly. The agency agrees with Nissan that that finding in Notice 26 is equally applicable to pre-August vehicles, but it does not consider an amendment of the standard necessary to afford the relief Nissan requests. Although the opinions in *Chrysler v. DOT*, 474 F.2d 659 (6th Circuit 1972) and *Ford v. NHTSA*, 473 F.2d 1241 (6th Circuit, 1973), did not deal directly with the non-passive options in effect before August 15, 1973, a side effect of the court's invalidation of the test dummy specifications of S8.1.8 is to leave the belt breakage test of S4.1.1.3(c) without a means of measurement.

The agency has concluded that the belt breakage test of S4.1.1.3(c) is without effect in the absence of a test dummy. It will therefore not seek to enforce the requirement. In view of the short time remaining before S4.1.1.3 and other current options lapse in favor of the August 15, 1973 options, this interpretation will have a marginal effect on currently produced vehicles, all of which have been certified as complying with the breakage test. It may, however, be of benefit to manufacturers who plan to introduce their 1974 models prior to August 15, 1973.

Several comments stated that the passive restraint requirement for August 15, 1975, and August 15, 1977, should be deleted from the text of the standard as a result of *Chrysler v. DOT*, *supra*, and reinstated only after issuance of the dummy regulation. A petition filed by the Center for Auto Safety, in contrast, seeks to have the August 15, 1975, date established as promptly as possible. The NHTSA position is that the decision in *Chrysler v. DOT* suspends the mandatory passive restraint requirements, regardless of whether they remain in the text of the rule, and that their deletion at this time would have no

effect other than to require additional work at a later date.

Rulemaking, in addition to that now in progress with respect to the optional passive requirements, will be necessary in order to reestablish the date when passive restraints will be required. Before such rulemaking can be initiated, NHTSA is obliged to consider the comments it receives on the proposed test dummy regulation.

There has been some residual uncertainty as to the effect of the denial in Notice 26 of the petitions requesting restraint options in place of, or in addition to, the interlock system. The agency denied the petitions "to the extent that the petitions seek removal of the interlock requirement from the front outboard seats. . . ." It intended thereby to deny those petitions that would have added a fourth restraint option in addition to the interlock as well as to deny those that sought deletion of the interlock, and the language of denial in Notice 26 should be so construed.

The alternative interlock system proposed by Mr. Jesse R. Hollins, which was not discussed in detail in Notice 26, had been reviewed at the time of Notice 26 and was intended to be denied. The agency has again reviewed Mr. Hollins' petition and has again concluded that the benefits of his proposed system do not warrant the creation of such an alternative interlock system. His petition is accordingly denied.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 208, 49 CFR § 571.208, is amended in pertinent part as set forth below. Because this amendment imposes no additional burdens an effective date earlier than 180 days after issuance of this notice is found to be in the public interest.

Effective date: August 15, 1973.

Issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407; delegations of authority at 38 F.R. 12147.

Issued on June 15, 1973.

James E. Wilson  
Associate Administrator  
Traffic Safety Programs

**38 F.R. 16072**

**June 20, 1973**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208

### Occupant Crash Protection

(Docket No. 73-8; Notice 2)

The purposes of this notice are (1) to adopt a regulation that specifies a test dummy to measure the performance of vehicles in crashes, and (2) to incorporate the dummy into Motor Vehicle Safety Standard No. 208 (49 CFR § 571.208), for the limited purpose of evaluating vehicles with passive restraint systems manufactured under the first and second restraint options between August 15, 1973, and August 15, 1975. The question of the restraint system requirements to be in effect after August 15, 1975, is not addressed by this notice and will be the subject of future rulemaking action.

The test dummy regulation (49 CFR Part 572) and the accompanying amendment to Standard No. 208 were proposed in a notice published April 2, 1973 (38 F.R. 8455). The dummy described in the regulation is to be used to evaluate vehicles manufactured under sections S4.1.2.1 and S4.1.2.2, (the first and second options in the period from August 15, 1973, to August 15, 1975), and the section incorporating the dummy is accordingly limited to those sections. The dummy has not been specified for use with any protection systems after August 15, 1975, nor with active belt systems under the third restraint option (S4.1.2.3). The recent decision in *Ford v. NHTSA*, 473 F. 2d 1241 (6th Cir. 1973), removed the injury criteria from such systems. To make the dummy applicable to belts under the third option, the agency would have to provide additional notice and opportunity for comment.

By invalidating the former test dummy specification, the decision in *Chrysler v. DOT*, 472 F. 2d 659 (6th Cir. 1972), affected the restraint options in effect before August 15, 1975, as well as the mandatory passive restraint re-

quirements that were to be effective after that date. A manufacturer who built cars with passive restraints under one of the options would therefore be unable to certify the cars as complying with the standard, as illustrated by the necessity for General Motors to obtain a limited exemption from the standard in order to complete the remainder of a run of 1,000 air-bag equipped cars.

The immediate purpose of this rulemaking is to reconstitute those portions of the standard that will enable manufacturers to build passive restraint vehicles during the period when they are optional. The test dummy selected by the agency is the "GM Hybrid II", a composite developed by General Motors largely from commercially available components. GM had requested NHTSA to adopt the Hybrid II on the grounds that it had been successfully used in vehicle tests with passive restraint systems, and was as good as, or better than, any other immediately available dummy system. On consideration of all available evidence, the NHTSA concurs in this judgment. One fact weighing in favor of the decision is that General Motors has used this dummy to measure the conformity of its vehicles to the passive protection requirements of Standard 208, in preparation for the announced introduction of up to 100,000 air-bag-equipped vehicles during the 1974 model year.

No other vehicle manufacturer has announced plans for the production of passive restraint systems during the optional phase, nor has any other vehicle manufacturer come forward with suggestions for alternatives to Hybrid II. The NHTSA would have considered other dummies had some other manufacturer indicated that it

was planning to produce passive restraint vehicles during the option period and that some other dummy had to be selected in order to allow them to proceed with their plans. If there had been any such plans, NHTSA would have made every effort to insure that a test device satisfactory to said manufacturer would have been selected.

This agency recognizes that since various types of dummy systems have been in use under the previous specification, any selection of one dummy, as is required by the *Chrysler* decision, will necessitate readjustments by some manufacturers. However, considering the quantity of GM's production, the scope and advanced state of its passive restraint development program, and the fact that the Hybrid II does not differ radically from other dummies currently in use, in the NHTSA's judgment that dummy represents the best and least costly choice. That conclusion has not been contradicted by the comments to the docket.

The agency will not make any final decision regarding reinstatement of mandatory passive restraint requirements without further notice and opportunity for comment. Should the agency propose mandatory passive restraint requirements, the question of the conformity of the dummy that is chosen with the instructions of the court in *Chrysler* will again be open for comment. The NHTSA strongly encourages the continuance of the dummy test programs mentioned in the comments, in the hope that any problems that may arise can be identified and resolved before the dummy specifications for later periods are issued.

The Hybrid II dummy has been found by NHTSA to be a satisfactory and objective test instrument. In sled and barrier tests conducted by GM with the GM restraint systems and in sled tests conducted by Calspan Corp. on behalf of NHTSA, the Hybrid II has produced results that are consistent and repeatable. This is not to say that each test at the same nominal speed and deceleration has produced identical values.

In testing with impact sleds, and to an even greater extent with crash-tested vehicles, the test environment itself is complex and necessarily subject to variations that affect the results. The test data show, however, that the variance

from dummy to dummy in these tests is sufficiently small that a manufacturer would have no difficulty in deciding whether his vehicle would be likely to fail if tested by NHTSA.

The provisions of the dummy regulation have been modified somewhat from those proposed in the notice of proposed rulemaking, largely as a result of comments from GM. Minor corrections have been made in the drawings and materials specifications as a result of comments by GM and the principal dummy suppliers. The dummy specification, as finally adopted, reproduces the Hybrid II in each detail of its design and provides, as a calibration check, a series of performance criteria based on the observed performance of normally functioning Hybrid II components. The performance criteria are wholly derivative and are intended to filter out dummy aberrations that escape detection in the manufacturing process or that occur as a result of impact damage. The revisions in the performance criteria, as discussed hereafter, are intended to eliminate potential variances in the test procedures and to hold the performance of the Hybrid II within the narrowest possible range.

General Motors suggested the abandonment of the definition of "upright position" in section 572.4(c), and the substitution of a set-up procedure in section 572.11 to serve both as a positioning method for the performance tests and as a measurement method for the dummy's dimensions as shown in the drawings. The NHTSA does not object to the use of an expanded set-up procedure, but has decided to retain the term "upright position" with appropriate reference to the new section 572.11(i).

The structural properties test of section 572.5(c), which had proposed that the dummy keep its properties after being subjected to tests producing readings 25 percent above the injury criteria of Standard No. 208, has been revised to provide instead that the properties must be retained after vehicle tests in accordance with Standard No. 208.

The head performance criteria are adopted as proposed. The procedures have been amended to insure that the forehead will be oriented below the nose prior to the drop, to avoid interference from the nose. In response to comments by the Road Research Laboratory, American

Motors, and GM, an interval of at least 2 hours between tests is specified to allow full restoration of compressed areas of the head skin.

The neck performance criteria are revised in several respects, in keeping with GM's recommendations. The pendulum impact surface, shown in Figure 4, has been modified in accordance with GM's design. The zero time point has been specified as the instant the pendulum contacts the honeycomb, the instructions for determining chordal displacement have been modified, and the pulse shape of the pendulum deceleration curve has been differently specified. The maximum allowable deceleration for the head has been increased slightly to 26g. In response to suggestions by the Road Research Laboratory and the Japan Automobile Manufacturers Association (JAMA), as well as GM, a tolerance has been specified for the pendulum's impact velocity to allow for minor variances in the honeycomb material.

With respect to the thorax test, each of the minor procedural changes requested by GM has been adopted. As with the head, a minimum recovery time is specified for the thorax. The seating surface is specified in greater detail, and the test probe orientation has been revised to refer to its height above the seating surface. The test probe itself is expressly stated to have a rigid face, by amendment to section 572.11, thereby reflecting the probes actually used by NHTSA and GM. A rigid face for the probe was also requested by Mercedes Benz.

The test procedures for the spine and abdomen tests are specified in much greater detail than before, on the basis of suggestions by GM and others that the former procedures left too much room for variance. The test fixtures for the spinal test orientation proposed by GM, and its proposed method of load application have been adopted. The parts of the dummy to be assembled for these tests are specifically recited, and an initial 50° flexion of the dummy is also specified. The rates of load application and removal, and the method of taking force readings are each specified. The direction of force application is clarified in response to a comment by Volvo.

The abdomen test is amended with respect to the initial point of force measurement, to re-

solve a particular source of disagreement between GM's data and NHTSA's. The boundaries of the abdominal force-deflection curve are modified to accord with the measurements taken by GM subsequent to the issuance of the notice. The rate of force application is specified as not more than 0.1 inch per second, in response to comments by Mercedes Benz, JAMA, and GM.

The test procedures for the knee tests are revised to specify the type of seating surface used and to control the angle of the lower legs in accordance with suggestions by JAMA, the Road Research Laboratory, and GM. The instrumentation specifications of section 572.11 are amended to clarify the method of attachment and orientation of the thorax accelerometers and to specify the channel classes for the chest potentiometer, the pendulum accelerometer, and the test probe accelerometer, as requested by several comments.

The design and assembly drawings for the test dummy are too cumbersome to publish in the *Federal Register*. During the comment period on the April 2 notice, the agency maintained master copies of the drawings in the docket and placed the reproducible mylar masters from which the copies were made with a commercial blueprint facility from whom interested parties could obtain copies. The NHTSA has decided to continue this practice and is accordingly placing a master set of drawings in the docket and the reproducible masters for these drawings with a blueprint facility.

The drawings as adopted by this notice differ only in minor detail from those that accompanied the April 2 notice. The majority of the changes, incorporated into corrected drawings, have already been given to those persons who ordered copies. The letter of June 13, 1973, that accompanied the corrected drawings has been placed in the docket. The June corrections are incorporated into the final drawing package. Additional adjustments are made hereby to reflect better the weight distribution of separated segments of the dummy, to allow other materials to be used for head ballast, and to specify the instrument for measuring skin thickness. The details of these changes are recited in a memorandum incorporated into the drawing package.

Each of the final drawings is designated by the legend "NHTSA Release 8/1/73". Each drawing so designated is hereby incorporated as part of the test dummy specifications of 49 CFR Part 572. Subsequent changes in the drawings will not be made without notice and opportunity for comment.

The incorporation of the Part 572 test dummy into Standard No. 208 makes obsolete several test conditions of the standard that had been adopted to supplement the former test dummy specifications. The location, orientation, and sensitivity of test instrumentation formerly specified by sections S8.1.15 through S8.1.18 are now controlled by Part 572 and are no longer necessary within Standard No. 208. Similarly, the use of rubber components for the head, neck and torso joints as specified in Part 572, supplant the joint setting specifications for those joints in section S8.1.10 of the standard. The NHTSA has determined that the deletion of the above portions of the Standard No. 208 will have no effect on the substantive requirements of the standard and that notice and public procedure thereon are unnecessary.

In consideration of the foregoing, Title 49, Code of Federal Regulations, is amended by the revision of Motor Vehicle Safety Standard No. 208 (49 CFR § 571.208). . . .

In view of the pressing need for a test dummy to permit the continued development of passive restraint systems, and the fact that it presently only relates to a new option for compliance, the NHTSA finds that there is good cause to adopt an immediate effective date. Accordingly, Part 572 is effective August 1, 1973, and the amendment to Standard 208 is effective August 15, 1973.

Issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, P.L. 89-563, 15 U.S.C. 1392, 1407, and the delegation of authority at 38 F.R. 12147.

Issued on July 26, 1973.

James E. Wilson  
Associate Administrator  
Traffic Safety Programs

**38 F.R. 20449**  
**August 1, 1973**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208****Occupant Crash Protection****(Docket No. 69-7; Notice 29)**

The purpose of this notice is to postpone the effective date of the requirements of Standards No. 208, Occupant Crash Protection, and 216, Roof Crush Resistance, applicable to the upcoming model year, from August 15, 1973 to September 1, 1973.

The amendment of the effective date was proposed in a notice published July 17, 1973 (38 F.R. 19049), in response to a petition filed by Chrysler Corporation. Chrysler had stated that the build-out of their 1973 models was in danger of running beyond the August 15 date, due to a variety of factors beyond the company's control. In proposing the postponement of the date, the NHTSA noted that the August 15 date had been chosen to coincide with the normal changeover date and that a delay would not appear to have any effect beyond allowing a slightly prolonged build-out.

The two comments submitted in response to the proposal were both favorable. The agency has not discovered any adverse consequences of a delay which would make it inadvisable, and

has therefore decided to postpone the effective date as proposed.

In light of the foregoing, 49 CFR 571.208, Standard No. 208, Occupant Crash Protection, is amended by changing the date of August 14, 1973, appearing in S4.1.1 to August 31, 1973, and by changing the date of August 15, 1973, appearing in S4.1.2 to September 1, 1973. The effective date of 49 CFR 571.216, Standard No. 216, Roof Crush Resistance, is changed from August 15, 1973, to September 1, 1973.

Because this amendment relieves a restriction and imposes no additional burden, an effective date of less than 30 days from the date of issuance is found to be in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on August 10, 1973.

James B. Gregory  
Administrator

**38 F.R. 21930**  
**August 14, 1973**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208

### Occupant Crash Protection

(Docket No. 73-24; Notice 2)

This notice amends Standard No. 208, *Occupant crash protection*, 49 CFR 571.208, to permit determination of the maintenance schedule for crash deployed occupant protection systems by reference to vehicle mileage and year and date of vehicle manufacture. The amendment responds to a rulemaking petition submitted by General Motors on May 21, 1973.

The present procedure for determining maintenance necessitates a change in labels each month. The two new methods published in a notice of proposed rulemaking on October 24, 1973 (38 F.R. 29341), avoid the label change and are phrased in typical warranty terms familiar to consumers. All comments received were in favor of the proposal and the standard is being amended accordingly.

In consideration of the foregoing, S4.5.1 of Motor Vehicle Safety Standard No. 208, *Occu-*

*pant crash protection*, 49 CFR 571.208, is amended. . . .

*Effective date:* January 10, 1974. Because the amendment relaxes a requirement and creates no additional burden, it is found for good cause shown that an effective date earlier than one hundred eighty days after issuance is in the public interest.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on January 3, 1974.

James B. Gregory  
Administrator

**39 F.R. 1513**  
**January 10 1974**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208

### Occupant Crash Protection

(Docket No. 74-4; Notice 2)

This notice amends Standard No. 208, *Occupant crash protection*, 49 CFR 571.208, by specifying emergency and special release requirements for seat belt assemblies that require no action by vehicle occupants (passive belts). This notice also sets out procedures for determination of whether a belt assembly qualifies as a passive restraint system in accordance with an interpretation published May 4, 1971 (36 F.R. 4600).

The passive belt release mechanism was proposed to grant a petition for rulemaking by Volkswagenwerk Aktiengesellschaft and Volkswagen of America, Inc. directed toward introduction of its passive belt system in its 1975 model cars (39 F.R. 3834, January 30, 1974). The proposed release mechanism, which reflects comments to an earlier proposal on release from passive belt systems (36 F.R. 12866, July 8, 1971) consists of a push-button latch release, guarded by a warning buzzer and interlock.

With the exception of Britax, Ltd., all comments favored a requirement for a manual release mechanism in passive belt systems, although most comments suggested changes in the proposal. One comment addressed to the adequacy of the Volkswagen belt system apparently did not understand that any passive belt system must meet the same injury criteria as any other passive system.

Britax pointed out the possibility of abuse of the manual release mechanism, but the NHTSA has concluded that the advantages of a release mechanism, as discussed in Notice 1, outweigh the disadvantages of possible abuse. The temptation to defeat the passive belt is less than it is with active belts, because the vehicle starts with the least inconvenience when the belt is permitted to work correctly.

The American Safety Equipment Corporation suggested that lever or pull-knob action would be a more satisfactory release mechanism than the push-button for occupants who only use the release infrequently and in emergency situations. There is a considerable advantage in uniformity, however, for those who do not normally use passive belt systems. The NHTSA specifies push-button action for all belt systems so that persons familiar with any belt system in any vehicle can operate the belt system of an unfamiliar vehicle. A person who operates typical 3-point active belts in his own car should be able to use the same push-button release action when he is a guest in a passive-belt equipped vehicle.

Manufacturers suggested several changes in the specifications for the warning buzzer and interlock guarding mechanism. American Motors recommended that the manufacturer be able to select either a starter interlock or the alternative power train interlock which has been proposed by the NHTSA. While there appear to be no disadvantages in such an option, the interlock requirements need not be changed until the NHTSA has acted on the alternative interlock proposal.

As proposed, the guarding features would operate if the release mechanism were unfastened. The Japan Automobile Manufacturers Association suggested addition of the option available in sequential interlocks, which operates the features if the belt length on the retractor indicates that the belt is not properly deployed. Such an option would be inappropriate, however, where there were no sequential system, because it would permit easy and permanent defeat of the system by knotting the belt after it had once been drawn from the retractor.

The proposal would have added a reference in S4.1.2.2 to the S4.5.3 passive belt exception in order to clarify their relationship. General Motors stated that, in actuality, the reference confused the relationship of S4 and S4.5.3 by implying that the S4.5.3 exception is limited to S4.1.2.2. The proposed addition will not be made.

Volkswagen suggested a clarification of the S7.2(b) latch mechanism requirement to remove the implication that a lap belt is required with the upper torso restraint, and this change has been made.

Volkswagen, in a March 8, 1974, letter request for interpretation, and General Motors in its comments, addressed the broad question of what constitutes a "passive" restraint system—one that requires "no action by vehicle occupants"—as those concepts are used in Standard No. 208. The NHTSA published an interpretation of what constitutes a "passive" restraint system on May 4, 1971 (36 F.R. 4600):

The concept of an occupant protection system that requires "no action by vehicle occupants" as used in Standard No. 208 is intended to designate a system that requires no action other than would be required if the protective system were not present in the vehicle.

The NHTSA responded to Volkswagen's request with a letter further interpreting this concept as follows:

The question of what constitutes "no action by vehicle occupants" in a vehicle equipped with (presumptively) passive belts is best considered in two stages: (1) entry and exit from the vehicle, and (2) positioning of the belt for safety and comfort.

Entry and exit action "that requires no action other than would be required if the protective system were not present in the vehicle" means that a person is not hampered in his normal movements by the presence of the belt system. A test of this is whether a human occupant of approximately the dimensions of the 50th percentile adult male finds it necessary to take additional actions to displace the belt or associated components in order to enter or leave the seating

position in question. An example of impermissible action would be the necessity of manually pushing a belt out of the way to gain access to the seat. Displacement of the components incidental to entry and exit, or merely for the convenience of the occupant would not be prohibited. Examples of permissible displacement would be brushing against the upper torso restraint during seating, or grasping the torso restraint to close the door.

The second question relates to the usefulness of the system once the occupant has been seated. The essence of a passive restraint is that it provides at least the minimum level of protection without relying on occupant action to deploy the restraint. At this stage, then, the question is whether an occupant who has seated himself without taking any "additional action" is in fact protected in a 30 mi/h impact. This can be measured by conducting the impact tests with the belt positioned on the test dummy in the orientation that results when a human occupant enters the vehicle according to the first test described above. It would not be required that the belt position itself for maximum comfort of the human occupant, if it met the safety requirements. For example, if the belt were to fall across the upper arm instead of the clavicle, but still passed the test, the system would be considered conforming.

The procedure for conducting this evaluation would be to have a human occupant enter the vehicle without taking any "additional actions" to displace the belt, to note the location of the belt on him before he exits, to position the test dummy in accordance with S8.1 of Standard 208, to position the belt as it positioned itself on the sample occupant, and then to conduct the impact tests. The exit evaluation would require the human occupant to be seated with the restraint normally deployed and then exit the vehicle without needing to take any separate actions to displace the belt.

In light of this interpretation, the NHTSA does not believe additional specification is required in the standard as requested by General Motors.

In consideration of the foregoing, Standard No. 208 (49 CFR 571.208) is amended. . . .

*Effective date:* May 27, 1974. On the basis of a determination that it is in the public interest to permit the introduction of a passive belt system concurrently with the 1975 passenger car model changes, it is found for good cause shown that an effective date earlier than 180 days following the date of issuance of this amendment is in the public interest.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on April 22, 1974.

James B. Gregory  
Administrator

**39 F.R. 14593**  
**April 25, 1974**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208

### Occupant Crash Protection

(Docket No. 74-39; Notice 1)

This notice amends Standard No. 208, *Occupant crash protection*, 49 CFR 571.208, by eliminating the ignition interlock. Parallel changes are made to the passive seat belt provisions (S4.5.3) and the seat belt assembly requirements (S7.) of the standard.

This amendment is responsive to recently-enacted legislation which prohibits, after February 25, 1975, any Federal motor vehicle safety standard that requires or provides for use of a safety belt interlock system or a "continuous buzzer" warning. Pub. L. 93-492; § 109 (Oct. 28, 1974). The legislation further specifies that lap and shoulder belt assemblies shall be installed until the NHTSA undertakes further rulemaking on alternative systems. The NHTSA concludes that immediate action to delete the interlock option conforms to the intent of the legislation. Accordingly, S4.1.2.3, S4.5.3, and S7.4 have been modified as necessary to specify seat belt assemblies without an interlock that inhibits operation of the vehicle engine.

The legislation does not list the exact specifications of the warning system which will replace the "continuous buzzer" after 120 days, but it restricts the buzzer portion of any future warning to an 8-second period following operation of the ignition. Because the legislation leaves considerable regulatory discretion concerning warning systems, and a new system may require

components not presently in manufacturers' inventories, the NHTSA finds it necessary and desirable to propose the new requirements in a separate notice, permitting opportunity for consideration and submission of comments by interested persons. Final action will be taken by December 27, 1974, to specify a new warning system as required by the statute.

In consideration of the foregoing, Standard No. 208 (49 CFR 571.208) is amended. . . .

*Effective date:* October 29, 1974. Because this amendment relieves a restriction and responds to a Congressional mandate expressed in the Motor Vehicle and Schoolbus Safety Amendments of 1974, the National Highway Traffic Safety Administration finds, for good cause shown, that notice and public procedure hereon are impracticable and unnecessary, and that an immediate effective date is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); Sec. 109, 111 Pub. L. 93-492; delegation of authority at 49 CFR 1.51.)

Issued on October 29, 1974.

James B. Gregory  
Administrator

39 F.R. 38380  
October 31, 1974



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208****Occupant Crash Protection****(Docket No. 74-39; Notice 3)**

This notice amends Standard No. 208, *Occupant crash protection*, 49 CFR 571.208, to establish a new warning system for seat belt assemblies to replace the present warning system after February 24, 1975. The new system is permitted as an alternative to the present requirements until February 24, 1975.

This amendment responds to recently-enacted legislation which prohibits, after February 24, 1975, any Federal motor vehicle safety standard that requires or provides for use of a safety belt interlock or a "continuous buzzer" warning. Pub. L. 93-492; § 109, October 27, 1974 (15 U.S.C. § 1410(b)). An earlier amendment of the standard revoked the interlock option (39 F.R. 38380, October 31, 1974). In prohibiting the "continuous buzzer", the legislation states that an acceptable buzzer would operate only during an 8-second period after the ignition is turned to the "start" or "on" position. The legislation placed no restriction on warning lights. The present warning system provisions in Standard No. 208 do not comply with the legislative limit on "continuous buzzers".

On October 29, 1974, the NHTSA proposed a modified warning that would consist of a continuous or flashing reminder light that operates only during the 4- to 8-second period after the ignition is operated, and a continuous or intermittent audible warning signal which operates only during the 4- to 8-second period after the ignition is operated if the driver's lap belt is not in use (39 F.R. 38391, October 31, 1974). The light would operate independently of belt use, so that the "Fasten Seat Belt" reminder would remain effective even if the belt were disabled to silence the audible warning. With a view to cost-effectiveness, the NHTSA proposed two other alternative courses of action. The

first would require only a visual reminder signal as described above and the second would eliminate entirely requirements for belt-use warning or reminder systems.

The notice proposed that the new system be optional until February 25, 1975, so that a manufacturer could effectuate the transition on an orderly basis.

The comments received varied greatly in their recommendations on the principal proposal, the visual-only alternative, and the possibility of no warning system requirements at all. Ford believed that the limited duration of the warning would make it relatively ineffective, and that deleting the belt warning requirements would have the best overall effect on public acceptance of seat belts. General Motors supported a visual-only reminder, and proposed an optional means of providing that visual reminder. Chrysler Corporation argued for a more complex warning system that would sense belt use at the right front passenger position as well as the driver's position, and would include a continuous warning light in place of the 4- to 8-second visual reminder. Volkswagen supported the audible-visual combination but recommended that both signals act as a reminder and function independently of belt use.

Smiths Industries Limited, a manufacturer of interlock units, Economics and Science Planning, and Switches, Inc., recommended that the sequential warning feature remain as an added incentive to operate the belt system. Other comments completely supported or opposed the proposal and in some cases offered totally new suggestions.

The NHTSA has carefully weighed the comments submitted in order to specify the most reasonable belt warning system requirements

available. NHTSA studies show that belt usage by front seat occupants of interlock-equipped cars currently is about 38 percent. If from this percentage is subtracted the percentage of persons who would fasten their seat belts regardless of forcing systems, it can be seen that the fraction of the population whose behavior will be affected by any warning system is quite small. Because of the limited benefit, the reminder should be provided at as low a cost as feasible.

Because an irritating light can be easily ignored or disabled, a visual signal can effectively serve only a reminder function, and as such, it should be as simple as possible. The NHTSA concludes that a 4- to 8-second reminder is best calculated to accomplish the advisory function.

Chrysler recommended that the warning and reminder system be installed at the right front passenger position, which would add significant retractor or buckle switch, wiring, and seat sensor costs. The NHTSA calculates that the driver's warning system (or belt use) will offer substantially the same reminder to a front seat passenger as a limited-duration signal at the passenger position.

The Administration has determined that an audible-visual combination will provide the best reminder at a cost commensurate with the benefits achievable in a limited-duration signal. Comments on the alternative proposals and on manufacturer-suggested options did not establish that variations on the principal proposal offered significantly greater safety benefit in the short or long term. Accordingly, Standard No. 208 is amended as proposed to adopt a new belt warning system, as an alternative to the present system until February 24, 1975, and as the only permissible belt warning system thereafter.

With regard to the warning's duration, Ford suggested that the range of signal duration be expanded to a longer 2- to 8-second duration to permit use of a more economical timer. This request is denied. The 4-second minimum duration was selected as the best compromise between the necessary manufacturer's tolerance and the duration necessary to alert the occupants fully.

Some manufacturers, such as American Motors Corporation, have considered the use of thermal timer mechanisms, which can be affected by extremes of ambient temperature and battery voltage, and by repeated cycling. Standard No. 208 does not presently specify an ambient temperature for testing. Because no temperature was proposed, and in view of the necessity of specifying a warning system to comply with the legislation by December 26, 1974, the NHTSA will issue the present amendment without an ambient temperature test condition. Until the question of the need for a temperature specification is resolved, this agency will consider that compliance with the requirements is required at moderate ambient temperatures. Performance of these systems will be observed with a view to further rulemaking on temperature, cycling, and other criteria.

It should be noted that the February 25, 1975, date proposed for mandatory use of the new system was calculated on an October 28, 1974, enactment of the "Motor Vehicle and Schoolbus Safety Amendments of 1974". In fact these amendments were enacted on October 27, 1974, and accordingly the "continuous buzzer" systems must be deleted by February 24, 1975, as is now reflected in the wording of this amendment.

In another area, White Motor Company has pointed out that the amendatory language in both notices of Docket No. 74-39 inadvertently included motor vehicles other than passenger cars in the belt warning requirement. The wording of this amendment corrects this error as to vehicles manufactured in the future. The requirements of S7.3 published in the Federal Register on October 31, 1974 (39 F.R. 38380) were intended to apply, and will be treated by this agency as applying, only to motor vehicles manufactured in accordance with S4.1.2 and S4.1.3.

In a matter related to seat belt modifications, the NHTSA hereby terminates rulemaking on a proposal to amend Standard No. 208 that would have permitted use of a drive train interlock mode in place of the ignition interlock

mode to meet the "third option" belt interlock requirements of S4.1.2.3. A proposal on this alternative interlock was published January 23, 1974 (39 F.R. 2610). As noted earlier, the NHTSA has already modified S4.1.2.3 of the standard to specify seat belt assemblies without an interlock that inhibits operation of the vehicle engine. For this reason, it is appropriate to terminate further rulemaking on the alternative interlock mode. No further action in this area will be taken without further notice and opportunity for comment.

In consideration of the foregoing, Standard No. 208 (49 CFR 571.208) is amended. . . .

*Effective date:* December 3, 1974.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); Sec. 109, Pub. L. 93-492, 88 Stat. 1470 (15 U.S.C. 1410(b)); delegation of authority at (49 CFR 1.51).

Issued on December 2, 1974.

James B. Gregory  
Administrator

**39 F.R. 42692**

**December 6, 1974**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208

### Occupant Crash Protection

(Docket No. 75-14; Notice 2)

This notice amends Standard No. 208, *Occupant crash protection*, 49 CFR 571.208, to permit until January 1, 1976, the installation of current seat belt assemblies in trucks and multipurpose passenger vehicles (MPV) with a gross vehicle weight rating of 10,000 pounds or less. This amendment was proposed (40 F.R. 23897, June 3, 1975) in response to petitions from Chrysler Corporation and Jeep Corporation.

In both the Jeep and Chrysler petitions and in comments on the proposal, vehicle manufacturers stated that the current economic situation may cause the continued production of 1975-model vehicles beyond August 15, 1975, after their production would normally have been terminated. Significant cost in obsolete material and in running changes would be involved in the introduction of the new 3-point belt systems in vehicles which are designed to accept lap belts only.

Ford Motor Company concurred in the proposal in view of obsolescence costs which might be avoided by the 4-month option. General Motors Corporation only indicated that it did not object to the proposal. The American Safety Belt Council emphasized the readiness of seat belt manufacturers to supply the new systems and the importance of a swift decision. They expressed support for the introduction of 3-point systems as soon as possible. The Recreational Vehicle Industry Association sought confirmation of its understanding that the proposal did not modify requirements for motor homes and forward control vehicles under S4.2. (RVIA's understanding is correct.) Chrysler and Jeep supported the proposal, and Jeep supplied production and retail cost information for which it requested confidentiality.

It is apparent from the nature of data submitted by manufacturers that the 20-day comment period did not allow adequate time for collection and development of the items enumerated in the preamble to the proposal. While it would be preferable to provide manufacturers more time to develop additional data, the NHTSA recognizes that virtually no time remains in which to make decisions for August 1975 production. The cost data already submitted by Jeep and the engineering changes submitted by Chrysler do permit an NHTSA judgment on cost objections of manufacturers under § 113 and on the advisability of the proposed modification.

Using the Chrysler submission as representative of the production changes to be undertaken by any manufacturer in effecting a running change to the seat belt systems of the 1975-model vehicles built after August 14, 1975, it is concluded that the total cost implications of these changes would be substantial if undertaken. The Jeep itemized cost information on production changes bore out this conclusion. In terms of obsolescence, it is confirmed by Ford that the decreased sales will result in obsolescence due to inability to balance out stocks of seat belts and other components in 1975-model vehicles.

Pursuant to § 113(b)(1) of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. § 1402(b)(1)), the information on which this evaluation is based is available in the NHTSA public docket (Docket No. 75-14, Notice 1; PRM #208-000022; PRM #105-000019) except for the Jeep submission. The NHTSA is presently determining whether the submission is entitled to confidential treatment. If it is not, the submission will be placed in Docket No. 75-14, Notice 1.

In all, the information submitted by manufacturers, particularly Chrysler, indicates that a substantial number of changes would be required to effect a running change to the vehicles in question after August 15, 1975. The cost data submitted by Jeep indicate that these changes will result in significant cost increases. The NHTSA has decided that the significant costs of the running changes in 1975-model vehicles whose production may be continued after August 15, 1975, are not justified for the numbers of vehicles that might be affected.

In consideration of the foregoing, Standard No. 208 (49 CFR 571.208) is amended. . . .

*Effective date:* July 9, 1975. Because this amendment concerns production decisions that

must be made immediately for the model changes in September 1975, it is found for good cause shown that an immediate effective date is in the public interest.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on July 3, 1975.

James B. Gregory  
Administrator

**40 F.R. 28805**  
**July 9, 1975**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 208

### Occupant Crash Protection

(Docket No. 74-14; Notice 4)

This notice amends Standard No. 208, *Occupant crash protection*, 49 CFR 571.208, to continue until August 31, 1976, the present three options available for occupant crash protection in passenger cars. This amendment replaces provisions of the standard which were to have come into effect on August 15, 1975, but were suspended as a result of the decision of the U.S. Court of Appeals for the Sixth Circuit in *Chrysler v. DOT*, 472 F2d 659 (6th Cir. 1972).

This extension of the present occupant crash protection options was proposed April 10, 1975 (40 F.R. 21617). Vehicle manufacturers and the American Safety Belt Council (ASBC) supported the proposal, but requested that the modifications apply indefinitely instead of being limited to a 1-year extension. Ford Motor Company, Chrysler Corporation, and Volkswagen of America also asked that the future provisions for light trucks and multipurpose passenger vehicles (MPV) (S4.2.3) be similarly modified. The California Traffic Safety Foundation and the Vehicle Equipment Safety Commission supported the proposal but only for the 1-year period for which it was proposed.

While the NHTSA recognizes that the present crash protection options will in all likelihood be in effect for some period after August 31, 1976, the agency has not proposed more than the 1-year extension. The Administrative Procedures Act specifies, with limited exceptions, that

notice and opportunity to comment be provided interested persons in the case of agency rule-making proceedings (§ 553(b)). The NHTSA intends to propose the long-term requirements for occupant crash protection, both for passenger cars and for light trucks and MPV's, as soon as possible.

Until that time, the NHTSA finds that manufacturers must be assured of the regulations for occupant crash protection as they apply to upcoming production. In consideration of the foregoing, Standard No. 208 (49 CFR § 571.208) is amended. . . .

*Effective date:* August 13, 1975. Because the present requirements for occupant crash protection terminate in less than 30 days and manufacturers need to be advised of the continuation of the requirements as soon as possible, it is found for good cause shown that an effective date sooner than 30 days following the date of publication is in the public interest.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on August 8, 1975.

James B. Gregory  
Administrator

**40 F.R. 33977**  
**August 13, 1975**



## MOTOR VEHICLE SAFETY STANDARD NO. 208

### Occupant Crash Protection in Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses

(Docket No. 69-7; Notice No. 9)

**51. Scope.** This standard specifies performance requirements for the protection of vehicle occupants in crashes.

**52. Purpose.** The purpose of this standard is to reduce the number of deaths of vehicle occupants, and the severity of injuries, by specifying vehicle crashworthiness requirements in terms of forces and accelerations measured on anthropomorphic dummies in test crashes, and by specifying equipment requirements for active and passive restraint systems.

**53. Application.** [This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses. In addition, S9, *Pressure vessels and explosive devices*, applies to vessels designed to contain a pressurized fluid or gas, and to explosive devices, for use in the above types of motor vehicles as part of a system designed to provide protection to occupants in the event of a crash. (37 F.R. 9222—May 6, 1972. Effective: 6/2/72)]

**54. General requirements.**

**54.1 Passenger cars.**

[**54.1.1 Passenger cars manufactured from January 1, 1972, to August 31, 1973.** Each passenger car manufactured from January 1, 1972, to August 31, 1973, inclusive, shall meet the requirements of S4.1.1.1, S4.1.1.2, or S4.1.1.3. A protection system that meets the requirements of S4.1.1.1 or S4.1.1.2 may be installed at one or more designated seating positions of a vehicle that otherwise meets the requirements of S4.1.1.3. (38 F.R. 21930—August 14, 1973. Effective: 8/31/73)]

**54.1.1.1 First option—complete passive protection system.** The vehicle shall meet the crash

protection requirements of S5 by means that require no action by vehicle occupants.

**54.1.1.2 Second option—lap belt protection system with belt warning.** The vehicle shall—

(a) [At each designated seating position have a Type 1 seat belt assembly or a Type 2 seat belt assembly with a detachable upper torso portion that conforms to S7.1 and S7.2 of this standard. (37 F.R. 3911—February 24, 1972. Effective: 2/24/72)]

(b) At each front outboard designated seating position have a seat belt warning system that conforms to S7.3; and

(c) Meet the frontal crash protection requirements of S5.1, in a perpendicular impact, with respect to anthropomorphic test devices in each front outboard designated seating position restrained only by Type 1 seat belt assemblies.

**54.1.1.3 Third option—lap and shoulder belt protection system with belt warning.**

**54.1.1.3.1** Except for convertibles and open-body vehicles, the vehicle shall—

(a) At each front outboard designated seating position have a Type 2 seatbelt assembly that conforms to Standard No. 209 and S7.1 and S7.2 of this standard, with either an integral or detachable upper torso portion, and a seatbelt warning system that conforms to S7.3;

(b) At each designated seating position other than the front outboard positions, have a Type 1 or Type 2 seat belt assembly that conforms to Standard No. 209 and to S7.1 and S7.2 of this standard; and

(c) When it perpendicularly impacts a fixed collision barrier, while moving longitudinally

forward at any speed up to and including 30 m.p.h., under the test conditions of S8.1 with anthropomorphic test devices at each front outboard position restrained by Type 2 seatbelt assemblies, experience no complete separation of any load-bearing element of a seatbelt assembly or anchorage.

**S4.1.1.3.2** Convertibles and open-body type vehicles shall at each designated seating position have a Type 1 or Type 2 seatbelt assembly that conforms to Standard No. 209 and to S7.1 and S7.2 of this standard, and at each front outboard designated seating position have a seatbelt warning system that conforms to S7.3.

**S4.1.2 [Passenger cars manufactured from September 1, 1973, to August 31, 1976.** Passenger cars manufactured from September 1, 1973, to August 31, 1976, inclusive, shall meet the requirements of S4.1.2.1, S4.1.2.2, or S4.1.2.3. A protection system that meets the requirements of S4.1.2.1 or S4.1.2.2 may be installed at one or more designated seating positions of a vehicle that otherwise meets the requirements of S4.1.2.3. (40 F.R. 33977—August 13, 1975. Effective: 8/13/75]

**S4.1.2.1 First option—complete passive protection system.** The vehicle shall meet the crash protection requirements of S5 by means that require no action by vehicle occupants.

**S4.1.2.2 Second option—head-on passive protection system.** The vehicle shall—

[(a) At each designated seating position have a Type 1 seat belt assembly or a Type 2 seat belt assembly with a detachable upper torso portion that conforms to S7.1 and S7.2 of this standard. (37 F.R. 3911—February 24, 1972. Effective: 2/24/72)]

(b) At each front designated seating position, meet the frontal crash protection requirements of S5.1, in a perpendicular impact, by means that require no action by vehicle occupants;

(c) At each front designated seating position, meet the frontal crash protection requirements of S5.1, in a perpendicular impact, with a test device restrained by a Type 1 seatbelt assembly; and

(d) At each front outboard designated seating position, have a seatbelt warning system that conforms to S7.3.

**S4.1.2.3 Third option—lap and shoulder belt protection system with belt warning.**

**S4.1.2.3.1** [Except for convertibles and open-body vehicles, the vehicle shall—

(a) At each front outboard designated seating position have a seat belt assembly that conforms to S7.1 and S7.2 of this standard, and a seat belt warning system that conforms to S7.3. The belt assembly shall be either a Type 2 seat belt assembly with a nondetachable shoulder belt that conforms to Standard No. 209 (§ 571.209), or a Type 1 seat belt assembly such that with a test device restrained by the assembly the vehicle meets the frontal crash protection requirements of S5.1 in a perpendicular impact.

(b) At any center front designated seating position, have a Type 1 or Type 2 seat belt assembly that conforms to Standard No. 209 (§ 571.209) and to S7.1 and S7.2 of this standard, and a seat belt warning system that conforms to S7.3; and

(c) At each other designated seating position, have a Type 1 or Type 2 seat belt assembly that conforms to Standard No. 209 (§ 571.209) and S7.1 and S7.2 of this standard. (39 F.R. 38380—October 31, 1974. Effective: 10/29/74)]

**S4.1.2.3.2** [Convertibles and open-body type vehicles shall at each designated seating position have a Type 1 or Type 2 seat belt assembly that conforms to Standard No. 209 (§ 571.209) and to S7.1 and S7.2 of this standard, and at each front designated seating position have a seat belt warning system that conforms to S7.3. (39 F.R. 38380—October 31, 1974. Effective: 10/29/74)]

**S4.1.3** [Reserved. (40 F.R. 33977—August 13, 1975. Effective: 8/13/75)]

**S4.2 Trucks and multipurpose passenger vehicles with GVWR of 10,000 pounds or less.**

**S4.2.1 [Trucks and multipurpose passenger vehicles, with GVWR of 10,000 pounds or less, manufactured from January 1, 1972, to December 31, 1975.** Each truck and multipurpose passenger vehicle with a gross vehicle weight rating

of 10,000 pounds or less, manufactured from January 1, 1972, to December 31, 1975, inclusive, shall meet the requirements of S4.2.1.1 or S4.2.1.2, or at the option of the manufacturer, the requirements of S4.2.2. A protection system that meets the requirement of S4.2.1.1 may be installed at one or more designated seating positions of a vehicle that otherwise meets the requirements of S4.2.1.2. (40 F.R. 28805—July 9, 1975. Effective: 7/9/75) ]

**S4.2.1.1 First option—complete passive protection system.** The vehicle shall meet the crash protection requirements of S5 by means that require no action by vehicle occupants.

**S4.2.1.2 Second option—belt system.** The vehicle shall have seat belt assemblies that conform to Standard 209 installed as follows:

(a) A Type 1 or Type 2 seat belt assembly shall be installed for each designated seating position in convertibles, open-body type vehicles, and walk-in van-type trucks.

(b) In all vehicles except those for which requirements are specified in S4.2.1.2(a), a Type 2 seat belt assembly shall be installed for each outboard designated seating position that includes the windshield header within the head impact area, and a Type 1 or Type 2 seat belt assembly shall be installed for each other designated seating position.

**S4.2.2 [Trucks and multipurpose passenger vehicles, with GVWR of 10,000 pounds or less, manufactured from January 1, 1976, to August 14, 1977.** Each truck and multipurpose passenger vehicle, with a gross vehicle weight rating of 10,000 pounds or less, manufactured from January 1, 1976, to August 14, 1977, inclusive, shall meet the requirements of S4.1.2 (as specified for passenger cars), except that forward control vehicles, convertibles, open-body type vehicles, walk-in van-type trucks, motor homes, and vehicles carrying chassis-mount campers may instead meet the requirements of S4.2.1.2. (40 F.R. 28805—July 9, 1975. Effective: 7/9/75) ]

**S4.2.3 Trucks and multipurpose passenger vehicles, with GVWR of 10,000 pounds or less, manufactured on or after August 15, 1977.** Each truck and multipurpose passenger vehicle, with a gross vehicle weight rating of 10,000 pounds

or less, manufactured on or after August 15, 1977, shall meet the occupant crash protection requirements of S5 by means that require no action by vehicle occupants, except that forward control vehicles may instead meet the requirements of S4.2.1.2, and convertibles, open-body vehicles, walk-in van-type trucks, motor homes, and vehicles carrying chassis-mounted campers may instead meet the requirements of S4.1.2.2.

**S4.3 Trucks and multipurpose passenger vehicles, with GVWR of more than 10,000 pounds.** Each truck and multipurpose passenger vehicle, with a gross vehicle weight rating of more than 10,000 pounds, manufactured on or after January 1, 1972, shall meet the requirements of S4.3.1 or S4.3.2. A protection system that meets the requirements of S4.3.1 may be installed at one or more designated seating positions of a vehicle that otherwise meets the requirements of S4.3.2.

**S4.3.1 First option—complete passive protection system.** The vehicle shall meet the crash protection requirements of S5 by means that require no action by vehicle occupants.

**S4.3.2 Second option—belt system.** The vehicle shall, at each designated seating position, have either a Type 1 or a Type 2 seatbelt assembly that conforms to Standard No. 209.

**S4.4 Buses.** Each bus manufactured on or after January 1, 1972, shall meet the requirements of S4.4.1 or S4.4.2.

**S4.4.1 First option—complete passive protection system—driver only.** The vehicle shall meet the crash protection requirements of S5, with respect to an anthropomorphic test device in the driver's designated seating position, by means that require no action by vehicle occupants.

**S4.4.2 Second option—belt system—driver only.** The vehicle shall, at the driver's designated seating position, have either a Type 1 or a Type 2 seatbelt assembly that conforms to Standard No. 209.

**S4.5 Other general requirements.**

**S4.5.1 Labeling and driver's manual information.** [Each vehicle shall have a label setting forth the manufacturer's recommended schedule for the maintenance or replacement, necessary to retain the performance required by this standard, of any crash deployed occupant protection system. The schedule shall be specified by month

and year, or in terms of vehicle mileage, or by intervals measured from the date appearing on the vehicle certification label provided pursuant to 49 CFR Part 567. The label shall be permanently affixed to the vehicle within the passenger compartment and lettered in English in block capitals and numerals not less than three thirty-seconds of an inch high. Instructions concerning maintenance or replacement of a system and a description of the functional operation of the system shall be provided with each vehicle, with an appropriate reference on the label. If a vehicle owner's manual is provided, this information shall be included in the manual. (39 F.R. 1513—January 10, 1974. Effective: 1/10/74)】

**54.5.2 Readiness indicator.** 【An occupant protection system that deploys in the event of a crash shall have a monitoring system with a readiness indicator. The indicator shall monitor its own readiness and shall be clearly visible from the driver's designated seating position. A list of the elements of the system being monitored by the indicator shall be included with the information furnished in accordance with S4.5.1 but need not be included on the label. (36 F.R. 19254—October 1, 1971. Effective: 1/1/72)】

【**54.5.3 Passive belts.** Except as provided in S4.5.3.1, a seat belt assembly that requires no action by vehicle occupants (hereinafter referred to as a "passive belt") may be used to meet the crash protection requirements of any option under S4 and in place of any seat belt assembly otherwise required by that option.

**54.5.3.1** A passive belt that provides only pelvic restraint may not be used pursuant to S4.5.3 to meet the requirements of an option that requires a Type 2 seat belt assembly.

**54.5.3.2** A passive belt, furnished pursuant to S4.5.3, that provides both pelvic and upper torso restraint may have either a detachable or non-detachable upper torso portion, notwithstanding provisions of the option under which it is furnished.

**54.5.3.3** 【A passive belt furnished pursuant to S4.5.3 shall—

(a) Conform to S7.1 and S7.2 of this standard; and

(b) In place of a warning system that conforms to S7.3 or S7.3a of this standard, be equipped with a warning system as specified in subparagraph (1), except that a seat belt assembly provided in a vehicle that is manufactured prior to February 24, 1975, may, at the option of the manufacturer, be equipped with a warning system as specified in subparagraph (1) or as specified in subparagraph (2):

(1) At the left front designated seating position (driver's position), be equipped with a warning system that activates, for a period of not less than 4 seconds and not more than 8 seconds (beginning when the vehicle ignition switch is moved to the "on" or the "start" position), a continuous or flashing warning light, visible to the driver, displaying the words "Fasten Seat Belts" or "Fasten Belts" when condition (A) exists, and a continuous or intermittent audible signal when condition (A) exists simultaneously with condition (B).

(A) The vehicle's ignition switch is moved to the "on" position or to the "start" position.

(B) The driver's lap belt is not in use, as determined by the belt latch mechanism not being fastened.

(2) Be equipped with a warning system that activates, for at least one minute, a continuous or intermittent audible signal and a continuous or flashing warning light, visible to the driver, displaying the words "Fasten Seat Belts" or "Fasten Belts", whenever the ignition switch is in the "start" position and the latch mechanism is not fastened, and whenever the vehicle engine is running, the transmission gear selector is placed in any forward position, and the latch mechanism is not fastened. (39 F.R. 42692—December 6, 1974. Effective: 12/3/74)】

**54.5.3.4** A passive belt furnished pursuant to S4.5.3 that is not required to meet the perpendicular frontal crash protection requirements of S5.1 shall conform to the webbing, attachment hardware, and assembly performance requirements of Standard No. 209. (36 F.R. 23725—December 14, 1971. Effective: 1/1/72)】

## **55. Occupant crash protection requirements.**

**55.1 Frontal barrier crash.** 【When the vehicle, traveling longitudinally forward at any speed up to and including 30 m.p.h., impacts a fixed

collision barrier that is perpendicular to the line of travel of the vehicle, or at any angle up to 30° in either direction from the perpendicular to the line of travel of the vehicle, under the applicable conditions of S8, with anthropomorphic test devices at each designated seating position for which a barrier crash test is required under S4, it shall meet the injury criteria of S6. (37 F.R. 3911—February 24, 1972. Effective: 2/24/72)】

**S5.2 Lateral moving barrier crash.** When the vehicle is impacted laterally on either side by a barrier moving at 20 m.p.h., with test devices at the outboard designated seating positions adjacent to the impacted side, under the applicable conditions of S8, it shall meet the injury criteria of S6.

**S5.3 Rollover.** When the vehicle is subjected to a rollover test in either lateral direction at 30 m.p.h. with test devices in the outboard designated seating positions on its lower side as mounted on the test platform, under the applicable conditions of S8, it shall meet the injury criteria of S6.1. 【However, vehicles manufactured before August 15, 1977, that conform to the requirements of Standard No. 216 (§ 571.216) need not conform to this rollover test requirement (36 F.R. 23299—December 8, 1971. Effective: 1/1/72)】

**S.6 Injury criteria.**

**S6.1** All portions of the test device shall be contained within the outer surfaces of the vehicle passenger compartment throughout the test.

**S6.2** 【The resultant acceleration at the center of gravity of the head shall be such that the expression:

$$\left[ \frac{1}{t_2 - t_1} \int_{t_1}^{t_2} a dt \right]^{2.5} (t_2 - t_1)$$

shall not exceed 1,000, where *a* is the resultant acceleration expressed as a multiple of *g* (the acceleration of gravity), and *t*<sub>1</sub> and *t*<sub>2</sub> are any two points in time during the crash. However, in the case of a passenger car manufactured before August 31, 1976, or a truck or multipurpose passenger vehicle with a GVWR of 10,000 pounds or less manufactured before August 15, 1977,

when the dummy is restrained by a seat belt system, *t*<sub>1</sub> and *t*<sub>2</sub> are any two points in time during any interval in which the head is in continuous contact with a part of the vehicle other than the belt system. (40 F.R. 33977—August 13, 1975. Effective: 8/13/75)】

**S6.3** 【The resultant acceleration at the center of gravity of the upper thorax shall not exceed 60g, except for intervals whose cumulative duration is not more than 3 milliseconds. However, in the case of a passenger car manufactured before August 31, 1976, or a truck or multipurpose passenger vehicle with a GVWR of 10,000 pounds or less manufactured before August 15, 1977, the resultant acceleration at the center of gravity of the upper thorax shall be such that the severity index calculated by the method described in SAE Information Report J885a, October, 1966, shall not exceed 1,000. (40 F.R. 33977—August 13, 1975. Effective: 8/13/75)】

**S6.4** 【The force transmitted axially through each upper leg shall not exceed 1,700 pounds. (37 F.R. 24903—November 23, 1972. Effective: 11/23/72)】

**S7. Seat belt assembly requirements—passenger cars.**

**S7.1 Adjustment.**

**S7.1.1** Except as specified in S7.1.1.1 and S7.1.1.2, the lap belt of any seat belt assembly furnished in accordance with S4.1.1 and S4.1.2 shall adjust by means of an emergency-locking or automatic-locking retractor that conforms to Standard No. 209 to fit persons whose dimensions range from those of a 50th-percentile 6-year-old child to those of a 95th-percentile adult male and the upper torso restraint shall adjust by means of an emergency-locking retractor or a manual adjusting device that conforms to Standard No. 209 to fit persons whose dimensions range from those of a 5th-percentile adult female to those of a 95th-percentile adult male, with the seat in any position and the seat back in the manufacturer's nominal design riding position. 【However, an upper torso restraint furnished in accordance with S4.1.2.3.1(a) shall adjust by means of an emergency-locking retractor that conforms to Standard No. 209. (37 F.R. 3911—February 24, 1972. Effective: 2/24/72)】

**S7.1.1.1** A seat belt assembly installed at the driver's seating position shall adjust to fit persons whose dimensions range from those of a 5th-percentile adult female to those of a 95th-percentile adult male.

**S7.1.1.2** A seat belt assembly installed at any designated seating position other than the outboard positions of the front and second seats shall adjust either by a retractor as specified in S7.1.1 or by a manual adjusting device that conforms to Standard No. 209.

**S7.1.2** The intersection of the upper torso belt with the lap belt in any Type 2 seat belt assembly

furnished in accordance with S4.1.1 or S4.1.2, with the upper torso manual adjusting device, if provided, adjusted in accordance with the manufacturer's instructions, shall be at least 6 inches from the front vertical centerline of a 50th-percentile adult male occupant, measured along the centerline of the lap belt, with the seat in its rearmost and lowest adjustable position and with the seat back in the manufacturer's nominal design riding position.

**S7.1.3** The weights and dimensions of the vehicle occupants specified in this standard are as follows:

	50th-percentile 6-year-old child	5th-percentile adult female	50th-percentile adult male	95th-percentile adult male
Weight.....	47.3 pounds.....	102 pounds.....	164 pounds.....	215 pounds.
Erect sitting height.....	25.4 inches.....	30.9 inches.....	35.7 inches.....	38 inches.
Hip breadth (sitting).....	8.4 inches.....	12.8 inches.....	14.5 inches.....	16.5 inches.
Hip circumference (sitting).....	23.9 inches.....	36.4 inches.....	42 inches.....	47.2 inches.
Waist circumference (sitting).....	20.8 inches.....	23.6 inches.....	33 inches.....	42.5 inches.
Chest depth.....		7.5 inches.....	9 inches.....	10.5 inches.
Chest circumference:				
(nipple).....		30.5 inches.....		
(upper).....		29.8 inches.....	37.7 inches.....	44.5 inches.
(lower).....		26.6 inches.....		

**S7.2 Latch mechanism.** A seat belt assembly installed in a passenger car shall have a latch mechanism—

(a) Whose components are accessible to a seated occupant in both the stowed and operational positions;

[(b) That releases both the upper torso restraint and the lap belt simultaneously, if the assembly has a lap belt and an upper torso restraint that require unlatching for release of the occupant; and (39 F.R. 14593—April 25, 1974. Effective: 5/27/74)]

(c) That releases at a single point by a push-button action.

**S7.3 Seat belt warning system.** [A seat belt assembly provided in accordance with S4.1 shall be equipped with a seat belt warning as specified in S7.3a, except that a seat belt assembly provided in accordance with S4.1 in a vehicle manufactured prior to February 24, 1975, may, at the option of the manufacturer, be equipped with either a seat belt warning as specified in S7.3.1 through S7.3.5 or a seat belt warning as specified in S7.3a. (39 F.R. 42692—December 6, 1974. Effective: 12/3/74)]

**S7.3.1** [Seat belt assemblies provided at the front outboard seating positions in accordance with S4.1.1 or S4.1.2 shall have a warning system that activates, for at least one minute, a continuous or intermittent audible signal and continuous or flashing warning light, visible to the driver, displaying the words "Fasten Seat Belts" or "Fasten Belts" when condition (a) exists simultaneously with either of conditions (b) or (c).

[(a) The vehicle's engine is operating and the transmission gear selector is in any forward position. (36 F.R. 23725—December 14, 1971. Effective: 1/1/72)]

(b) [The driver's lap belt is not in use, as determined, at the manufacturer's option, either by the belt latch mechanism being fastened or by the belt being extended at least 4 inches from its stowed position. (37 F.R. 3911—February 24, 1972. Effective: 2/24/72)]

(c) [A person of at least the weight of a 50th percentile adult male is seated with the belt fastened at the driver's position, and a person of at least the weight of a 50th percentile 6-year-old child is seated in the right front designated seat-

ing position and the lap belt for that position is not in use, as determined, at the manufacturer's option, either by the belt latch mechanism being fastened or by the belt being extended at least 4 inches from its stowed position. (37 F.R. 3911—February 24, 1972. Effective: 2/24/72)】

**57.3.2** The warning system shall either—

【(a) Not activate when the lap belt at each occupied front outboard seating position is extended to any length greater than the length necessary to fit a 50th-percentile 6-year-old child when the seat is in the rearmost and lowest adjustment position:

(b) Not activate when the lap belt at each occupied front outboard position is buckled; or

(c) Not activate when the operation specified in (a) or (b) is performed at each occupied front outboard seating position after the occupant is seated. (37 F.R. 132065—July 6, 1972. Effective: 1/1/73)】

**57.3.3** 【The warning systems shall not activate if the vehicle has an automatic transmission, the engine is operating, and the gear selector is in the "Park" position. (37 F.R. 3911—February 24, 1972. Effective: 2/24/72)】

**57.3.4** 【Notwithstanding the provisions of S7.3.1 and S7.3.5.2, when the engine of a vehicle with a manual transmission is operating, the warning system shall either—

(a) Not activate when the transmission is in neutral; or

(b) Not activate when the parking brake is engaged.

**57.3.5** 【The above provisions of S7.3 shall apply to seat belt assemblies furnished in accordance with S4.1.2.3, with the following exceptions: (39 F.R. 38380—October 31, 1974. Effective: 10/29/74)】

**57.3.5.1** The warning system shall also be provided for the center front seating position, if any.

**57.3.5.2** In addition to the conditions specified in S7.3.1, the warning system shall activate if—

(a) The vehicle's engine is operating and the transmission gear selector is in any forward position, and

(b) A person of at least the weight of a 50th percentile adult male is seated with the belt fastened at the driver's position, and a person of at least the weight of a 5th percentile adult female

is seated in a center front designated seating position and the lap belt for the center front position is not in use, as determined, at the manufacturer's option, either by the belt latch mechanism being fastened or the belt being extended at least 4 inches from its stowed position.

**57.3.5.3** The provisions of S7.3.2 shall apply to all front seating positions.

**57.3.5.4** 【Notwithstanding the other provisions of S7.3, the warning system shall activate whenever the ignition switch is in the "start" position and the operation of the belt system at each occupied front outboard designated seating position has not been performed after the occupant is seated and condition (a) or (b) exists. Belt operation for the purpose of this requirement shall be, at the manufacturer's option, either the extension of the belt assembly at least 4 inches from its stowed position, or the fastening of the belt latch mechanism.

(a) A person of at least the weight of a 5th-percentile adult female is seated at the driver's seating position.

(b) A person of at least the weight of a 50th-percentile adult male is seated at the driver's seating position and a person of at least the weight of a 50th-percentile 6-year-old child is seated at the right front seating position. (39 F.R. 38380—October 31, 1974. Effective: 10/29/74)】

【**S7.3a** A seat belt assembly provided at the driver's seating position shall be equipped with a warning system that activates, for a period of not less than 4 seconds and not more than 8 seconds (beginning when the vehicle ignition switch is moved to the "on" or the "start" position), a continuous or flashing warning light, visible to the driver, displaying the words "Fasten Seat Belts" or "Fasten Belts" when condition (a) exists, and a continuous or intermittent audible signal when condition (a) exists simultaneously with condition (b).

(a) The vehicle's ignition switch is moved to the "on" position or to the "start" position.

(b) The driver's lap belt is not in use, as determined, at the option of the manufacturers, either by the belt latch mechanism not being fastened, or by the belt not being extended at least 4 inches from its stowed position. (39 F.R. 42692—December 6, 1974. Effective: 12/3/74)】

**57.4 Belt interlock system.** [Revoked. (39 F.R. 38380—October 31, 1974. Effective: 10/29/74)]

**58. Test conditions.**

**58.1 General conditions.** The following conditions apply to the frontal, lateral, and rollover tests.

**58.1.1** The vehicle, including test devices and instrumentation, is loaded as follows:

(a) *Passenger cars.* A passenger car is loaded to its unloaded vehicle weight plus its rated cargo and luggage capacity weight, secured in the luggage area, plus the weight of the necessary anthropomorphic test devices.

(b) *Multipurpose passenger vehicles, trucks, and buses.* [A multipurpose passenger vehicle, truck, or bus is loaded to its unloaded vehicle weight plus 300 pounds or its rated cargo and luggage capacity weight, whichever is less, secured in the load carrying area and distributed as nearly as possible in proportion to its gross axle weight ratings, plus the weight of the necessary anthropomorphic test devices. (36 F.R. 19254—October 1, 1971. Effective: 1/1/72)]

**58.1.2** Adjustable seats are in the adjustment position midway between the forwardmost and rearmost positions, and if separately adjustable in a vertical direction, are at the lowest position.

**58.1.3** Adjustable seat backs are in the manufacturer's nominal design riding position.

**58.1.4** Adjustable steering controls are adjusted so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions.

**58.1.5** Movable vehicle windows and vents are in the fully closed position.

**58.1.6** Convertibles and open-body type vehicles have the top, if any, in place in the closed passenger compartment configuration.

**58.1.7** Doors are fully closed and latched but not locked.

**58.1.8** [Anthropomorphic test devices used for the evaluation of restraint systems manufactured pursuant to sections S4.1.2.1 and S4.1.2.2 con-

form to the requirements of Part 572 of this title. (38 F.R. 20449—August 1, 1973. Effective: 8/15/73)]

**58.1.9** Each test device is clothed in form-fitting cotton stretch garments.

**58.1.10** [Limb joints are set at 1g, barely restraining the weight of the limb when extended horizontally. Leg joints are adjusted with the torso in the supine position. (38 F.R. 20449—August 1, 1973. Effective: 8/15/73)]

**58.1.11** Each test device is firmly placed in a designated seating position in the following manner:

(a) The head is aligned by placing the test device on its back on a rigid, level surface and by adjusting the head so that it touches the level surface and is laterally centered with respect to the device's axis of symmetry.

(b) The test device is placed in the vehicle in the normal upright sitting position and a rigid roller, 6 inches in diameter and 24 inches long, is placed transversely as low as possible against the front of the torso.

(c) The roller is pressed horizontally against the torso with a force of 50 pounds.

(d) Force is applied at the shoulder level to bend the torso forward over the roller, flexing the lower back, and to return the test device to the upright sitting posture.

(e) The roller is slowly released.

**58.1.12** Except as otherwise herein specified, the test devices are not restrained during impacts by any means that require occupant action.

**58.1.13** [The hands of the test device in the driver's designated seating position are on the steering wheel rim at the horizontal centerline. The right foot rests on the undepressed accelerator pedal, with the heel in contact with the point where the centerline of the upper surface of the undepressed accelerator pedal intersects the upper surface of the floor covering. The left leg is placed as in S8.1.14. (36 F.R. 19254—October 1, 1971. Effective: 1/1/72)]

**58.1.14** The hands of each other test device are resting on the seat with the palms touching the legs, and the upper arms are resting against the seat back and flush with the body. Where possible, the legs are outstretched, with the thighs

on the seat and the heels touching the floor with the foot at 90° to the tibia. Otherwise, the tibia are vertical with the feet resting on the floor. The left leg of a test device in the center front designated seating position is on the vehicle centerline, and the right leg is in the right footwell. The left and right legs of a test device in the center rear designated seating position are in the left and right footwells, respectively.

**58.1.15** Instrumentation does not affect the motion of test devices during impact or rollover.

**58.2 Lateral moving barrier crash test conditions.** The following conditions apply to the lateral moving barrier crash test:

**58.2.1** The moving barrier, including the impact surface, supporting structure, and carriage, weighs 4,000 pounds.

**58.2.2** The impact surface of the barrier is a vertical, rigid, flat rectangle, 78 inches wide and 60 inches high, perpendicular to its direction of movement, with its lower edge horizontal and 5 inches above the ground surface.

**58.2.3** During the entire impact sequence the barrier undergoes no significant amount of dynamic or static deformation, and absorbs no significant portion of the energy resulting from the impact, except for energy that results in translational rebound movement of the barrier.

**58.2.4** During the entire impact sequence the barrier is guided so that it travels in a straight line, with no significant lateral, vertical or rotational movement.

**58.2.5** The concrete surface upon which the vehicle is tested is level, rigid and of uniform construction, with a skid number of 75 when measured in accordance with American Society for Testing and Materials Method E-274-65T at 40 m.p.h., omitting water delivery as specified in paragraph 7.1 of that method.

**58.2.6** The tested vehicle's brakes are disengaged and the transmission is in neutral.

**58.2.7** The barrier and the test vehicle are positioned so that at impact—

(a) The vehicle is at rest in its normal attitude;

(b) The barrier is traveling in a direction perpendicular to the longitudinal axis of the vehicle at 20 m.p.h.; and

(c) A vertical plane through the geometric center of the barrier impact surface and perpendicular to that surface passes through the driver's seating reference point in the tested vehicle.

**58.3 Rollover test conditions.** The following conditions apply to the rollover test:

**58.3.1** The tested vehicle's brakes are disengaged and the transmission is in neutral.

**58.3.2** The concrete surface on which the test is conducted is level, rigid, of uniform construction, and of a sufficient size that the vehicle remains on it throughout the entire rollover cycle. It has a skid number of 75 when measured in accordance with American Society of Testing and Materials Method E-274-65T at 40 m.p.h. omitting water delivery as specified in paragraph 7.1 of that method.

**58.3.3** The vehicle is placed on a device, similar to that illustrated in Figure 1, having a platform in the form of a flat, rigid plane at an angle of 23° from the horizontal. At the lower edge of the platform is an unyielding flange, perpendicular to the platform with a height of 4 inches and a length sufficient to hold in place the tires that rest against it. The intersection of the inner face of the flange with the upper face of the platform is 9 inches above the rollover surface. No other restraints are used to hold the vehicle in position during the deceleration of the platform and the departure of the vehicle.

**58.3.4** With the vehicle on the test platform, the test devices remain as nearly as possible in the posture specified in S8.1.

**58.3.5** Before the deceleration pulse, the platform is moving horizontally, and perpendicularly to the longitudinal axis of the vehicle, at a constant speed of 30 m.p.h. for a sufficient period of time for the vehicle to become motionless relative to the platform.

**58.3.6** The platform is decelerated from 30 to 0 m.p.h. in a distance of not more than 3 feet, without change of direction and without transverse or rotational movement during the deceleration of the platform and the departure of the vehicle. The deceleration rate is at least 20g for a minimum of 0.04 seconds.

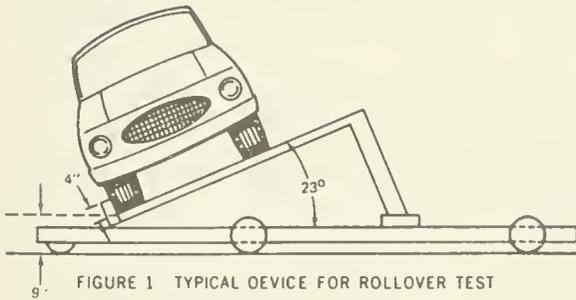


FIGURE 1 TYPICAL DEVICE FOR ROLLOVER TEST

**[S9. Pressure vessels and explosive devices.**

**S9.1 Pressure vessels.** A pressure vessel that is continuously pressurized shall conform to the requirements of 49 CFR § 178.65-2, -6(b), -7, -9(a) and (b), and -10. It shall not leak or evidence visible distortion when tested in accordance with § 178.65-11(a) and shall not fail in any of the ways enumerated in § 178.65-11(b) when hydrostatically tested to destruction. It shall not crack when flattened in accordance with § 178.65-12(a) to the limit specified in § 178.65-12(a)(4). (37 F.R. 9222—May 6, 1972. Effective: 6/2/72)]

**[S9.2 Explosive devices.** An explosive device shall not exhibit any of the characteristics prohibited by 49 CFR § 173.51. All explosive material shall be enclosed in a structure that is capable of containing the explosive energy without sudden release of pressure except through overpressure relief devices or parts designed to release the pressure during actuation. (37 F.R. 9222—May 6, 1972. Effective: 6/2/72)]

**[Interpretation**

Several persons have raised questions as to what constitutes a "passive" restraint system—one that requires "no action by vehicle occupants"—as those concepts are used in Standard No. 208, Occupant Crash Protection (36 F.R. 4600, March 10, 1971), effective January 1, 1972. Specifically, it has been asked whether occupant protection systems that require occupants to take protective action as a prerequisite to entering, seating themselves in, or operating a vehicle can qualify as a system that requires "no action." One commonly discussed example of such "forced action" systems is a seatbelt interlock, which requires a seat belt to be fastened before the vehicle ignition system is operative.

The concept of an occupant protection system that requires "no action by vehicle occupants" as used in Standard No. 208 is intended to designate a system that requires no action other than would be required if the protective system were not present in the vehicle. Under this interpretation the concept does not include "forced action" systems as described above.

This interpretation is not intended to rule out the possibility that further rulemaking action may be taken in the future to permit such systems in certain cases. (36 F.R. 8296—May 4, 1971. Effective: 5/4/71)]

**36 F.R. 4600  
March 10, 1971**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 209**  
**Seat Belt Assemblies—Passenger Cars, Multipurpose Passenger Vehicles, Trucks,**  
**and Buses**

Motor Vehicle Safety Standard No. 209 (32 F.R. 2415, as amended 32 F.R. 3310), specifies requirements for seat belt assemblies for use in passenger cars, multipurpose passenger vehicles, trucks and buses, incorporating by reference the requirements of Department of Commerce, National Bureau of Standards, *Standards for Seat Belts for Use in Motor Vehicles* (15 C.F.R. Part 9; 31 F.R. 11528).

The Administrator of the Federal Highway Administration has determined in the interests of clarity and ease of reference that the requirements specified by 15 C.F.R. Part 9 should be incorporated into Standard No. 209 where it is presently incorporated only by reference. Therefore Standard No. 209 is hereby amended by deleting present paragraph S3 and adding new paragraphs S3, S4, and S5, so as to incorporate the requirements of 15 C.F.R. Part 9. Accordingly 15 C.F.R. Part 9 is hereby deleted.

Since this amendment imposes no additional burden on any person and involves no substantive change in the requirements of Standard No. 209, notice and public procedure hereon are unnecessary and good cause is shown that an effective

date earlier than 180 days after issuance is in the public interest and the amendment may be made effective less than 30 days after publication in the *Federal Register*. The requirement of former Paragraph S3 of Standard No. 209 that seat belt assemblies shall use the attachment hardware specified in 15 C.F.R. § 9.3(f) "or approved equivalent hardware" has been incorporated into new Paragraph S4.1(f) of Standard No. 209.

This amendment is made under the authority of sections 103, 117(c) and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. secs. 1392, 1405(c), and 1407) and the delegation of authority contained in the Regulations of the Office of the Secretary (49 C.F.R. § 1(c)), and is effective upon publication in the *Federal Register*.

Issued in Washington, D.C., on December 24, 1968.

Lowell K. Bridwell,  
Federal Highway Administrator

**34 F.R. 115**  
**January 4, 1969**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 209

### Seat Belt Assemblies in Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses (Docket No. 69-23; Notice No. 2)

This notice amends Federal Motor Vehicle Safety Standard No. 209 in § 571.21 of Title 49 of the Code of Federal Regulations, to upgrade the requirements for seatbelt assemblies for use in passenger cars, multipurpose passenger vehicles, trucks, and buses. As amended, the standard is both an equipment and a vehicle standard. The equipment aspect applies to a seatbelt assembly manufactured on or after the effective date. The vehicle aspect applies to an assembly installed in a vehicle manufactured on or after the effective date, regardless of when the assembly was manufactured.

During the period since the original issuance of Standard No. 209, laboratory tests and experience with actual seatbelt usage have disclosed areas where improvements in performance requirements are necessary. Consequently, a notice of proposed amendments to the standard was published on March 17, 1970 (35 F.R. 4641) to upgrade the performance requirements for seatbelt assemblies. Interested persons were given an opportunity to comment on the contents of the proposed rule. These comments, and other available data, have been carefully considered in the development of these amendments.

Paragraph S4.1(f) of the standard is amended to make it clear that a manufacturer may use bolts other than the specified bolts if the substituted bolts are equivalent.

The standard formerly required a Type 1 or Type 2 seatbelt assembly to be adjustable to fit an occupant with the weight and dimensions of a 95th-percentile adult male. To insure that belt assemblies can be adjusted to fit the range of occupants who may use them, paragraph S4.1(g) is amended to require each Type 1 or Type 2

seatbelt assembly to be adjustable to fit occupants whose weight and dimensions range from those of a 5th-percentile adult female to those of a 95th-percentile adult male. A belt assembly installed for an adjustable seat must conform to the requirements regardless of seat position. Several comments noted that no dimensions were specified in the notice for the various occupants which a belt assembly must fit. To remedy the problem, the standard provides a table of weights and dimensions for 5th-percentile adult females and 95th-percentile adult males.

In the notice, it was proposed to reduce the force required to release seat belt buckles from 30 to 22.5 pounds and to require that the release force for pushbutton-type buckles be applied no closer than 0.125 inch from the edge of the pushbutton access opening. In light of comments received, and other available information, the value of 30 pounds has been retained. The procedure for testing the buckle release force of a pushbutton-type buckle has been amended as proposed, however, to insure that the release force will not be applied so close to the edge of the access opening that the button might tilt in a manner unrepresentative of actual use conditions and thereby exaggerate the release force.

The buckle crush release requirements are amended to extend the standard's crush release requirements to all Type 1 and Type 2 seatbelt buckles, and to require application of the test load to areas of a buckle other than directly over the center of the release mechanism. Experience has indicated that non-pushbutton buckle release mechanisms are also subject to impairment when compressed, and occupants using such buckles are therefore provided equivalent protection by the extension of the buckle crush release require-

ments. In laboratory tests on pushbutton-type buckles, buckle release or malfunction occurred when a compressive force as low as 275 pounds was applied to a surface area other than the area directly over the pushbutton. The amended test will tend to eliminate buckle designs that are prone to accidental damage, or that release during the initial phase of the accident.

The notice proposed a new buckle latch test procedure in which a specified tensile load was to be applied at 30° to the buckle. In the light of comments received and other information that has become available indicating that the requirement was not justified, the procedure has not been adopted.

In response to comments that the acceleration levels proposed in the notice were too high, the acceleration level above which an emergency-locking retractor must lock has been reduced from 2g, as proposed, to 0.7g, and the acceleration level below which the retractor must not lock has been reduced from 1g to 0.3g. For reasons of occupant convenience, the notice proposed that the required upper limit on acceleration had to be met only when the webbing was extended to the length necessary to fit a 5th-percentile adult female. Upon review it has been determined that the proposed free travel distance could make a belt unsafe for use by a child, and,

further, that an adequate measure of convenience is provided by the requirement that a belt not lock at accelerations of less than 0.3g. Accordingly, the standard does not limit the belt withdrawal range within which the acceleration levels must be met. For similar reasons, the retraction force requirements are required to be met regardless of the amount of belt withdrawal.

As stated in the notice, the hex-bar abrasion test does not adequately simulate the type of webbing abrasion caused by some buckles. The standard as amended retains the hex-bar test, but supplements it with an additional abrasion requirement, under which webbing is required to retain at least 75 percent of its breaking strength after being repeatedly passed through the assembly buckle or manual adjustment device.

Effective date: September 1, 1971.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 209 in § 571.21 of Title 49, Code of Federal Regulations, is amended. . . .

Issued on March 3, 1971.

Douglas W. Toms,  
Acting Administrator.

**36 F.R. 4607**  
**March 10, 1971**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 209

### Seat Belt Assemblies for Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses

The purpose of this notice is to amend Motor Vehicle Safety Standard No. 209, in § 571.21 of Title 49, Code of Federal Regulations, to clarify the method in which the buckle release force of a Type 3 seat belt assembly is measured.

The standard provides (S4.3(d)(1), S5.2(d)(1)) that the force required to release a Type 3 assembly buckle is measured following the assembly test of S5.3, with a force of  $45 \pm 5$  pounds applied to a torso block restrained by the Type 3 assembly. The test procedure was intended to represent the situation in which the vehicle is inverted and the child is held by the harness. The force applied along the line of the belt is of primary significance, but it appears that the release force of some buckles is significantly increased by the pressure of the torso block on the back of the buckle. This pressure is not regarded as representative of actual conditions, in that the hard surface of the torso block offers much more resistance than would a child's body. To eliminate the effects of such pressure by the torso block, section S5.3(c)(1) of the standard is amended to read as set forth below.

Since this amendment is interpretative and clarifying in intent and imposes no additional

burden on any person, notice and public procedure thereon are unnecessary.

Effective date: April 1, 1971.

The major usage of Type 3 seat belt assembly buckles will be on child seating systems that comply with Standard No. 213, effective April 1, 1971. So that the amendment to Standard No. 209 will have maximum effect, good cause is found for establishing an effective date sooner than 180 days after issuance. Since the amendment is interpretative in nature and relieves a restriction, there is also good cause for establishing an effective date sooner than 30 days after issuance.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 209, in § 571.21 of Title 49, Code of Federal Regulations, is amended. . . .

Issued on March 23, 1971.

Douglas W. Toms,  
Acting Administrator.

**36 F.R. 5973**  
**March 27, 1971**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 209**  
**Seat Belt Assemblies in Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses**  
**(Docket No. 69-23; Notice No. 3)**

**Reconsideration and Amendment**

The purpose of this notice is to respond to petitions filed pursuant to § 553.35 of Title 49, Code of Federal Regulations, requesting reconsideration of various amendments to Motor Vehicle Safety Standard No. 209, Seat Belt Assemblies, that were published March 10, 1971 (36 F.R. 4607). The petitions are granted in part and denied in part. Requests not expressly discussed in this notice should be considered denied.

1. One of the results of the March 10 amendments was that as of September 1, 1971, the standard would have become a vehicle standard as well as an equipment standard, *i.e.*, vehicles manufactured after the effective date would have had to have equipment conforming to the new requirements. The amendments relating to emergency-locking retractors are such, however, that with normal production tolerances it would be difficult to manufacture retractors that conform to the currently applicable requirements so that they would also conform to the post-September 1 requirements, and *vice-versa*. This creates an awkward situation, in which retractors supplied to vehicle manufacturers for use on September 1 would have to be made on September 1 and not before.

The vehicle aspect of the standard is therefore being deleted, and the date on which the amended requirements become mandatory is postponed to January 1, 1972, to coincide with the effective date of the new Standard No. 208. To allow for efficient changeover, manufacturers are permitted to manufacture belts to either the current or the amended requirements between September 1, 1971, and January 1, 1972.

2. With respect to the technical amendments to the attachment hardware requirements in

S4.1(f), American Safety Equipment Corporation requested that the reference to Standard No. 210 be omitted, so that anchorage nuts, plates, and washers would not have to be supplied if the vehicle has an anchorage that does not require them. The request has been found reasonable, and the standard is amended accordingly.

3. The National Highway Traffic Safety Administration has also evaluated requests by the American Safety Equipment Corporation concerning the range of occupants that a belt must adjust to fit, the test buckle release force test procedure, and the buckle crush resistance test procedure. The amended adjustment requirements (S4.1(g)(1) and (2)) specify more exactly the range of occupants that was intended by the original standard. The importance of having installed belts of proper length for the normal range of occupants outweighs, in the agency's judgment, the effort involved in ascertaining vehicle dimensions. The adjustment requirements are therefore not changed. With respect to the buckle test procedures, the petitioner's requests relating to the clarity of the buckle release procedure and to the need for an explanatory diagram to accompany the crush test are also denied. Although the buckle release test no longer refers to a method for testing lever action buckles, the method was little more than a suggestion and may in some cases have conflicted with the intent of the procedure that the force shall be applied so as to produce maximum releasing effect. The diagram requested to show the buckle crush procedure is not regarded as essential to understanding the procedure and has not been adopted.

4. Although no petition was received directly relating to the subject, the Swedish Trade Commission, on behalf of the Swedish manufactur-

ers, has expressed uncertainty as to how the crush test is to be applied to seat belt assemblies that have a buckle mounted on a rigid or semi-rigid bracket between the front seats. As described by the Commission, one design would tend to bend downwards under the pressure of the test device long before the required force of 400 pounds could be reached. In this case, the buckle will have to be supported from beneath, just as the conventional lap belt has to have some rigid backing in order to reach the 400-pound level. It is anticipated that if additional questions are raised concerning the method of force application to specific buckles, such questions can be answered through administrative interpretation.

5. Several petitions questioned the need to test a vehicle-sensitive emergency-locking retractor by accelerating it "in three directions normal to each other with its central axis oriented horizontally". The pendulum device used in most vehicle-sensitive retractors can sense lateral accelerations and sense the tilt of the vehicle, but it cannot readily sense upward or downward accelerations of the type required by the three-direction test when the retractor is oriented horizontally. It was suggested by Volvo that a retractor that locks when tilted to 35° in any direction should be exempt from the acceleration requirement. Volkswagen recommended accelerating the retractor in the horizontal plane in two directions normal to each other. On reconsideration, the National Highway Traffic Safety Administration has concluded that it is appropriate to relieve such a retractor from the vertical acceleration requirement when it is oriented horizontally and to establish an alternative to the requirement that it lock when accelerated in directions out of the horizontal plane, but that accelerations within the horizontal plane should continue to be required.

Accordingly, S5.2(j) is amended to require a vehicle-sensitive retractor to be accelerated in the horizontal plane in two directions normal to each other. During these accelerations, the retractor will be oriented at the angle in which it is installed in the vehicle. In addition, the retractor must either lock when accelerated in orientations out of the horizontal as prescribed in the March 10 rule or lock by gravity when

tilted in any direction to any angle greater than 45°.

6. One petitioner questioned the correctness of requiring webbing-sensitive retractors to be accelerated in the direction of webbing retraction, rather than in the direction of webbing withdrawal. The usage is necessary because under the test procedures of S5.2(j) it is the *retractor*, and not the webbing, that is accelerated. The acceleration must be in the direction that will reel the webbing out of the retractor—*i.e.*, the direction in which the webbing moves when retracting.

7. An additional question on retractor acceleration levels concerns the distance which a belt must be withdrawn in determining compliance with the requirement that the retractor shall not lock at 0.3g or less (S4.3(j)(ii)). The Hamill Manufacturing Company has requested an amendment to S4.3(j)(ii) to provide that the retractor shall not lock before the webbing extends a short distance at an acceleration of 0.3g. The National Highway Traffic Safety Administration recognizes that many retractors may be velocity-sensitive to some degree as well as acceleration-sensitive. Although a retractor that locks at too low a velocity would be an inconvenience, the NHTSA recognizes that an occupant does not ordinarily accelerate the belt after an initial pull and that the usual velocity involved in withdrawing the belt is low. On reconsideration, the NHTSA has therefore decided to amend S4.3(j)(ii) to provide that the retractor shall not lock before the webbing extends 2 inches at 0.3g.

8. Several petitioners pointed out that the requirements for retractor force specified in S4.3(j)(iii) and (iv) were not appropriate for systems in which a single length of webbing is used to provide both lap and shoulder restraint. In a typical installation of this sort, the webbing passes from a floor-mounted retractor up to a fitting on the B-pillar, then down across the shoulder to a slip joint on the buckle connector, and from there back across the lap to an out-board floor attachment. Although such a system may provide satisfactory restraint, it cannot simultaneously exceed a retractive force of 1.5 pounds on the lap belt and have a retractive

force on the shoulder belt of between 0.45 and 1.1 pounds, and it would therefore fail to conform to the standard as published March 10.

Upon reconsideration, the National Highway Traffic Safety Administration has decided to amend S4.3(j) by establishing retraction forces for 3-point systems that employ a single length of webbing. A new subsection (v) is added that requires such a system to have a retraction force falling within the range 0.45 pounds-1.50 pounds, and (iii) and (iv) are amended so that they do not apply to retractors in such systems. This range was suggested by Volkswagen, Volvo, and Klippan, and is considered to be a reasonable compromise between the need to provide complete retraction of the belt when not in use and

the need to limit the force so that it will not be uncomfortable to occupants.

*Effective date:* January 1, 1972, except that seat belt assemblies manufactured on or after September 1, 1971 and before January 1, 1972, may conform either to the current requirements of Standard No. 209 in 49 CFR 571.21 or to the requirements of Standard No. 209 as amended by this notice and the notice of March 10, 1971 (36 F.R. 4607).

Issued on August 26, 1971.

Charles H. Hartman  
Acting Administrator

**36 F.R. 17430**  
**August 31, 1971**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 209

### Seat Belt Assemblies

(Docket No. 73-16; Notice 2)

The purpose of this notice is to amend certain requirements of Motor Vehicle Safety Standard No. 209 (49 CFR 571.209), *Seat belt assemblies*, relating to the width of belt webbing and to the performance of seat belt retractors. The amendments were proposed in a notice published June 20, 1973 (38 FR 16084).

In the June 20 notice, the agency proposed to allow the width of those portions of a combination lap and shoulder belt that do not touch the occupant to be less than the 1.8 inches formerly required by the standard. The Chrysler Corporation, in its comment, suggested that narrower webbing should also be permitted for the type of lap belt that is used by itself. The agency agrees that a lap belt in combination with a shoulder belt (known as Type 2 assembly) is indistinguishable from an independent lap belt (Type 1 assembly), as far as the width of its webbing is concerned, and is therefore amending the standard to permit narrower webbing for non-contact portions of Type 1 belts as well as Type 2 belts.

Chrysler also requested narrower webbing for non-contact portions of children's harnesses (Type 3 assemblies). In view of the close-fitting design of Type 3 assemblies, the agency has not found a benefit to be gained from the use of narrower webbing in the few areas of non-contact. The Type 3 requirements are not being amended at this time. The American Safety Equipment Corporation requested that the contactability of the webbing with occupants be determined with a range of occupants. The agency remains persuaded that the use of a 95th percentile adult male occupant will be sufficient to insure that the narrower webbing will not touch any occupant who uses the seat. The

agency therefore declines to adopt American Safety's suggestion.

The proposed amendment of the emergency-locking retractor requirements of S4.3 drew several comments, not all of them relating to the parts of S4.3 that were proposed to be changed. Mercedes Benz requested revision of the requirement of S4.3(j)(2) that the retractor must not lock before the webbing extends 2 inches under an acceleration of 0.3g or less. The 0.3g requirement had been carried over without change from the previous version of S4.3 and was thought to be a reasonable means of preventing retractors from being inconveniently sensitive. The NHTSA does not find sufficient cause at this time to alter its conclusion concerning the most appropriate minimum level and is therefore retaining the minimum level of 0.3g.

A second issue raised by Mercedes Benz concerns the treatment under section S4.3(j) of a retractor having both vehicle sensitive and webbing sensitive features. It has been the NHTSA's position that with respect to the maximum permissible locking level, a dual-action retractor would conform if it met either of the applicable requirements. Thus, a dual-action retractor whose webbing-sensitive mechanism locks within 1 inch at an acceleration of 0.7g will conform, even though its vehicle-sensitive mechanism is not capable of locking at its required level. With respect to the minimum locking level, however, different considerations apply. The agency's intent in providing a minimum level below which the retractor must not lock is to enhance the convenience of the system. The webbing-sensitive mechanism that locks below 0.3g would be no less inconvenient if coupled with a vehicle sensitive mechanism than it would

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be if used by itself. The agency has therefore concluded that a dual-action retractor may conform to the maximum locking acceleration level of 0.7g (S4.3(j)(1)) with either mechanism, but that it must conform to both minimum locking level requirements (S4.3(j)(2) and (3)).

The tilt angle of 17° proposed as the minimum locking level for vehicle sensitive retractors was stated by several comments to be too high. Although there was general agreement as to the advisability of using a tilt test rather than an acceleration test, lower tilt angles were suggested, ranging downward to 11°. After considering the comments, the NHTSA has concluded that a moderate downward revision to 15° will prevent retractor lockup in normal road operation and has adopted that angle in S4.3(j)(3). The suggestion by Ford and American Motors that the "retractor drum's central axis" may be difficult to determine in complicated mechanisms has been found to have merit and the requirement as adopted refers to the orientation at which the retractor is installed in the vehicle.

The proposed revisions to the minimum retraction force requirements for retractors attached to upper torso restraints encountered several objections, the principal one being that no one was certain about the meaning of the proposed requirement that the retractor should "retract the webbing fully." The quoted language had been proposed in response to a petition by General Motors requesting amendment of the requirement that the retractor exert a retractive force of not less than 0.45 pound. The GM petition had requested a force of 0.2 pound, but the agency's initial intent, as reflected in the notice, was to grant a potentially greater relief by deleting reference to a specific minimum force. It appears from the confusion in the comments that a contrary result might be produced in some cases, and the agency has therefore concluded that a simple reduction in the force level to the level requested by GM is the least complicated and most readily enforceable means of lowering the minimum force level. The suggestion by Ford, that the ability to retract is implicit in the definition of retractor and that no

minimum force level is required, has some merit, but the agency prefers to retain a measurable minimum level.

There were several questions of interpretation concerning the point at which the retraction force is to be measured. The test procedures of S5.2 provide that the webbing is to be fully extended, passing over any hardware or other material specified for use with the webbing, and that it is then to be retracted and the retraction force measured as the lowest force within plus or minus 2 inches of 75 percent extension. The procedure is intended to measure the ability of the retractor to retract the webbing as installed in the vehicle, and the point of measurement most consistent with this intent is the most distant point of the webbing from the retractor. The NHTSA intends to conduct its measurements in this fashion.

The proposed amendment to S5.2 that would amend the test procedures to reflect the limitation of the 0.3g acceleration level to webbing-sensitive retractors was not objected to and is adopted as proposed.

In consideration of the foregoing, S4.2(a), S4.3(j), and S5.2(j) of Motor Vehicle Safety Standard No. 209, 49 CFR § 571.209, are amended. . . .

Effective date: August 28, 1973. The NHTSA finds it desirable to allow manufacturers to produce seat belt assemblies under the requirements as hereby amended (which generally are relaxed relative to previous requirements) prior to the effective date of the next phase of Standard No. 208 (49 CFR 571.208). It is therefore found for good cause shown that an immediate effective date is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on August 23, 1973.

James B. Gregory  
Administrator

**38 F.R. 22958**  
**August 28, 1973**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 209****Seat Belt Assemblies****(Docket No. 73-16; Notice 4)**

This notice amends Standard No. 209, *Seat belt assemblies*, 49 CFR 571.209, to reduce the minimum retraction force required of emergency-locking retractors attached to lap belts from 1.5 pounds to 0.6 pounds. This amendment to S4.3(j)(4) responds to a rulemaking petition submitted by Toyo Kogyo.

A notice of proposed rulemaking published October 2, 1973 (38 F.R. 27303), proposed the modification because the 1.5-pound force could prove excessive for occupant comfort, and experience with the 0.6-pound level in automatic-locking retractors has been satisfactory. Their performance at 0.6 pounds does not support an assertion in one comment to the docket that degradation of the retractor elements over time would result in almost total loss of retractive force. All other comments to the docket were favorable.

In consideration of the foregoing, S4.3(j)(4) of Motor Vehicle Safety Standard No. 209, *Seat belt assemblies*, 49 CFR 571.209, is amended. . . .

*Effective date:* January 24, 1974. Because the amendment relaxes a requirement and creates no additional burden, it is found for good cause shown that an effective date earlier than one hundred eighty days after issuance is in the public interest.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on January 18, 1974.

James B. Gregory  
Administrator

**39 F.R. 2771**

**January 24, 1974**



## MOTOR VEHICLE SAFETY STANDARD NO. 209

### Seat Belt Assemblies—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses

(Docket No. 69-23)

#### 51. Purpose and Scope.

This standard specifies requirements for seat-belt assemblies.

#### 52. Application.

【This standard applies to seat belt assemblies for use in passenger cars, multipurpose passenger vehicles, trucks, and buses. (36 F.R. 17430—August 31, 1971. Effective: 1/1/72)】

#### 53. Definitions.

“Seat belt assembly” means any strap, webbing, or similar device designed to secure a person in a motor vehicle in order to mitigate the results of any accident, including all necessary buckles and other fasteners, and all hardware designed for installing such seat belt assembly in a motor vehicle.

“Pelvic restraint” means a seat belt assembly or portion thereof intended to restrain movement of the pelvis.

“Upper torso restraint” means a portion of a seat belt assembly intended to restrain movement of the chest and shoulder regions.

“Hardware” means any metal or rigid plastic part of a seat belt assembly.

“Buckle” means a quick release connector which fastens a person in a seat belt assembly.

“Attachment hardware” means any or all hardware designed for securing the webbing of a seat belt assembly to a motor vehicle.

“Adjustment hardware” means any or all hardware designed for adjusting the size of a seat belt assembly to fit the user; including such hardware that may be integral with a buckle, attachment hardware, or retractor.

“Retractor” means a device for storing part or all of the webbing in a seat belt assembly.

“Nonlocking retractor” means a retractor from which the webbing is extended to essentially its full length by a small external force, which provides no adjustment for assembly length, and which may or may not be capable of sustaining restraint forces at maximum webbing extension.

“Automatic-locking retractor” means a retractor incorporating adjustment hardware by means of a positive self-locking mechanism which is capable when locked of withstanding restraint forces.

“Emergency-locking retractor” means a retractor incorporating adjustment hardware by means of a locking mechanism that is activated by vehicle acceleration, webbing movement relative to the vehicle, or other automatic action during an emergency and is capable when locked of withstanding restraint forces.

“Seat back retainer” means the portion of some seat belt assemblies designed to restrict forward movement of a seat back.

“Webbing” means a narrow fabric woven with continuous filling yarns and finished selvages.

“Strap” means a narrow non-woven material used in a seat belt assembly in place of webbing.

“Type 1 seat belt assembly” is a lap belt for pelvic restraint.

“Type 2 seat belt assembly” is a combination of pelvic and upper torso restraints.

“Type 2a shoulder belt” is an upper torso restraint for use only in conjunction with a lap belt as a Type 2 seat belt assembly.

“Type 3 seat belt assembly” is a combination pelvic and upper torso restraint for persons weighing not more than 50 pounds or 23 kilograms and capable of sitting upright by themselves, that is children in the approximate age range of 8 months to 6 years.

**S4. Requirements.**

**S4.1 (a) *Single occupancy.*** A seat belt assembly shall be designed for use by one, and only one, person at any one time.

(b) *Pelvic restraint.* A seat belt assembly shall provide pelvic restraint whether or not upper torso restraint is provided, and the pelvic restraint shall be designed to remain on the pelvis under all conditions, including collision or roll-over of the motor vehicle. Pelvic restraint of a Type 2 seat belt assembly that can be used without upper torso restraint shall comply with requirements for Type 1 seat belt assembly in S4.1 to S4.4.

(c) *Upper torso restraint.* A Type 2 or Type 3 seat belt assembly shall provide upper torso restraint without shifting the pelvic restraint into the abdominal region. An upper torso restraint shall be designed to minimize vertical forces on the shoulders and spine. Hardware for upper torso restraint shall be so designed and located in the seat belt assembly that the possibility of injury to the occupants is minimized.

A Type 2a shoulder belt shall comply with applicable requirements for a Type 2 seat belt assembly in S4.1 to S4.4, inclusive.

(d) *Hardware.* All hardware parts which contact under normal usage a person, clothing, or webbing shall be free from burrs and sharp edges.

(e) *Release.* A Type 1 or Type 2 seat belt assembly shall be provided with a buckle or buckles readily accessible to the occupant to permit his easy and rapid removal from the assembly. A Type 3 seat belt assembly shall be provided with a quickly recognizable and easily operated release arrangement, readily accessible to an adult. Buckle release mechanism shall be designed to minimize the possibility of accidental release. A buckle with release mechanism in the latched position shall have only one opening in which the tongue can be inserted on the end of the buckle designed to receive and latch the tongue.

(f) *Attachment hardware.* [A seat belt assembly shall include all hardware necessary for installation in a motor vehicle in accordance with SAE Recommended Practice J800B, Motor Ve-

hicle Seat Belt Installations, September 1965. However, seat belt assemblies designed for installation in motor vehicles equipped with seat belt assembly anchorages that do not require anchorage nuts, plates, or washers, need not have such hardware, but shall have 7/16-20 UNF-2A or 1/2-13 UNC-2A attachment bolts or equivalent hardware. The hardware shall be designed to prevent attachment bolts and other parts from becoming disengaged from the vehicle while in service. Reinforcing plates or washers furnished for universal floor installations shall be of steel, free from burrs and sharp edges on the peripheral edges adjacent to the vehicle, at least .06 inch in thickness and at least 4 square inches in projected area. The distance between any edge of the plate and the edge of the bolt hole shall be at least 0.6 inch. Any corner shall be rounded to a radius of not less than 0.25 inch or cut so that no corner angle is less than 135° and no side is less than 0.25 inch in length. (36 F.R. 17430—August 31, 1971. Effective: 1/1/72)]

(g) *Adjustment.*

[(1) A Type 1 or Type 2 seat belt assembly shall be capable of adjustment to fit occupants whose dimensions and weight range from those of a 5th-percentile adult female to those of a 95th-percentile adult male. The seat belt assembly shall have either an automatic-locking retractor, an emergency-locking retractor, or an adjusting device that is within the reach of the occupant. A Type 3 seat belt assembly shall be capable of adjustment to fit any child capable of sitting upright and weighing not more than 50 pounds, unless it is specifically labeled for use on a child in a smaller weight range.

(2) A Type 1 or Type 2 seat belt assembly for use in a vehicle having seats that are adjustable shall conform to the requirements of S4.1(g)(1) regardless of seat position. However, if a seat has a back that is separately adjustable, the requirements of S4.1(g)(1) need be met only with the seat back in the manufacturer's nominal design riding position.

(3) The adult occupants referred to in S4.1(g)(1) shall have the following measurements:

	5th-percentile adult female	95th-percentile adult male
Weight.....	102 pounds...	215 pounds.
Erect sitting height.....	30.9 inches...	38 inches.
Hip breadth (sitting).....	12.8 inches...	16.4 inches.
Hip circumference (sitting).....	36.4 inches...	47.2 inches.
Waist circumference (sitting).....	23.6 inches...	42.5 inches.
Chest depth.....	7.5 inches...	10.5 inches.
Chest circumference: (nipple).....	30.5 inches...	} 44.5 inches.
(upper).....	29.8 inches...	
(lower).....	26.6 inches...	

(36 F.R. 4607—March 10, 1971. Effective: 9/1/71)】

(h) *Seat back retainer.* A Type 3 seat belt assembly designed for attachment to a seat back or for use in a seat with a hinged back shall include a seat back retainer unless such assembly is designed and labeled for use in specific models of motor vehicles in which the vehicle manufacturer has provided other adequate restraint for the seat back.

(i) *Webbing.* The ends of webbing in a seat belt assembly shall be protected or treated to prevent raveling. The end of webbing in a seat belt assembly having a metal-to-metal buckle that is used by the occupant to adjust the size of the assembly shall not pull out of the adjustment hardware at maximum size adjustment. Provision shall be made for essentially unimpeded movement of webbing routed between a seat back and seat cushion and attached to a retractor located behind the seat.

(j) *Strap.* A strap used in a seat belt assembly to sustain restraint forces shall comply with the requirements for webbing in § 4.2, and if the strap is made from a rigid material, it shall comply with applicable requirements in S4.2, S4.3 and S4.4.

(k) *Marking.* Each seat belt assembly shall be permanently and legibly marked or labeled with year of manufacture, model, and name or trademark of manufacturer or distributor, or of importer if manufactured outside the United States. A model shall consist of a single combination of webbing having a specific type of fiber weave and construction, and hardware having a specific design. Webbing of various colors may be included under the same model, but webbing

of each color shall comply with the requirements for webbing in S4.2.

(l) *Installation instructions.* A seat belt assembly or retractor shall be accompanied by an instruction sheet providing sufficient information for installing the assembly in a motor vehicle except for a seat belt assembly installed in a motor vehicle by an automobile manufacturer. The installation instructions shall state whether the assembly is for universal installation or for installation only in specifically stated motor vehicles, and shall include at least those items in SAE Recommended Practice, Motor Vehicle Seat Belt Installations—SAE J800b, published by the Society of Automotive Engineers.

(m) *Usage and maintenance instructions.* A seat belt assembly or retractor shall be accompanied by written instructions for the proper use of the assembly, stressing particularly the importance of wearing the assembly snugly and properly located on the body, and on the maintenance of the assembly and periodic inspection of all components. The instructions shall show the proper manner of threading webbing in the hardware of seat belt assemblies in which the webbing is not permanently fastened. Instructions for a nonlocking retractor shall include a caution that the webbing must be fully extended from the retractor during use of the seat belt assembly unless the retractor is attached to the free end of webbing which is not subjected to any tension during restraint of an occupant by the assembly. Instructions for Type 2a shoulder belt shall include a warning that the shoulder belt is not to be used without a lap belt.

(n) *Workmanship.* Seat belt assemblies shall have good workmanship in accordance with good commercial practice.

#### S4.2 Requirements for webbing.

(a) *Width.* 【The width of the webbing in a seat belt assembly shall be not less than the following when measured under the conditions prescribed in S5.1(a):

(1) Type 1 and Type 2 assemblies—1.8 inches, except for portions that do not touch a 95th percentile adult male with the seat in any adjustment position and the seat back in the manufacturer's nominal design riding position.

(2) Type 3 seat belt assembly—0.9 inch. (38 F.R. 22958—August 28, 1973. Effective: 8/28/73)】

(b) *Breaking strength.* The webbing in a seat belt assembly shall have not less than the following breaking strength when tested by the procedures specified in S5.1(b): Type 1 seat belt assembly—6,000 pounds or 2,720 kilograms; Type 2 seat belt assembly—5,000 pounds or 2,270 kilograms for webbing in pelvic restraint and 4,000 pounds or 1,810 kilograms for webbing in upper torso restraint; Type 3 seat belt assembly—1,500 pounds or 680 kilograms for webbing in pelvic and upper torso restraints, 4,000 pounds or 1,810 kilograms for webbing in seat back retainer and for webbing connecting pelvic and upper torso restraints to attachment hardware when assembly has single webbing connection, or 3,000 pounds or 1,360 kilograms for webbing connecting pelvic and upper torso restraint to attachment hardware when assembly has two or more webbing connections.

(c) *Elongation.* The webbing in a seat belt assembly shall not be extended to more than the following elongations when subjected to the specified forces in accordance with the procedure specified in S5.1(c): Type 1 seat belt assembly—20 percent at 2,500 pounds or 1,130 kilograms; Type 2 seat belt assembly—30 percent at 2,500 pounds or 1,130 kilograms for webbing in pelvic restraint and 40 percent at 2,500 pounds or 1,130 kilograms for webbing in upper torso restraint; Type 3 seat belt assembly—20 percent at 700 pounds or 320 kilograms for webbing in pelvic and upper torso restraints, and 25 percent at 2,500 pounds or 1,130 kilograms for webbing in seat back retainer and for webbing connecting pelvic and upper torso restraints to attachment hardware when assembly has single webbing connection, or 25 percent at 1,800 pounds or 820 kilograms for webbing connecting pelvic and upper torso restraints to attachment hardware when assembly has two or more webbing connections.

(d) *Resistance to abrasion.* 【The webbing of a seatbelt assembly, after being subjected to abrasion as specified in either S5.1(d) or S5.3(d), shall have a breaking strength of not less than 75 percent of the breaking strength listed in S4.2(b)

for that type of belt assembly. (36 F.R. 4607—March 10, 1971. Effective: 9/1/71)】

(e) *Resistance to light.* The webbing in a seat belt assembly after exposure to the light of a carbon arc and tested by the procedure specified in S5.1(e) shall have a breaking strength not less than 60 percent of the strength before exposure to the carbon arc and shall have a color retention not less than No. 2 on the Geometric Gray Scale published by the American Association of Textile Chemists and Colorists, Post Office Box 886, Durham, N. C.

(f) *Resistance to micro-organisms.* The webbing in a seat belt assembly after being subjected to micro-organisms and tested by the procedures specified in S5.1(f) shall have a breaking strength not less than 85 percent of the strength before subjection to micro-organisms.

(g) *Colorfastness to crocking.* The webbing in a seat belt assembly shall not transfer color to a crock cloth either wet or dry to a greater degree than class 3 on the AATCC Chart for Measuring Transference of Color published by the American Association of Textile Chemists and Colorists, when tested by the procedure specified in S5.1(g).

(h) *Colorfastness to staining.* The webbing in a seat belt assembly shall not stain to a greater degree than class 3 on the AATCC Chart for Measuring Transference of Color published by the American Association of Textile Chemists and Colorists, when tested by the procedure specified in S5.1(h).

#### **S4.3 Requirements for hardware.**

##### *(a) Corrosion resistance.*

(1) Attachment hardware of a seat belt assembly after being subjected to the conditions specified in S5.2(a) shall be free of ferrous corrosion on significant surfaces except for permissible ferrous corrosion at peripheral edges or edges of holes on underfloor reinforcing plates and washers. Alternatively, such hardware at or near the floor shall be protected against corrosion by at least a Type KS electrodeposited coating of nickel, or copper and nickel, and other attachment hardware shall be protected by a Type QS electrodeposited coating of nickel or copper and

nickel, in accordance with Tentative Specifications for Electrodeposited Coatings of Nickel and Chromium on Steel, ASTM Designation: A166-61T, published by the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103, but such hardware shall not be racked for electroplating in locations subjected to maximum stresses.

(2) Surfaces of buckles, retractors and metallic parts, other than attachment hardware, of a seat belt assembly after subjection to the conditions specified in S5.2(a) shall be free of ferrous or nonferrous corrosion which may be transferred, either directly or by means of the webbing, to the occupant or his clothing when the assembly is worn. After test, buckles shall conform to applicable requirements in paragraphs (d) to (g) of this section.

(b) *Temperature resistance.* Plastic or other nonmetallic hardware parts of a seat belt assembly when subjected to the conditions specified in S5.2(b) shall not warp or otherwise deteriorate to cause the assembly to operate improperly or fail to comply with applicable requirements in this section and S4.4.

(c) *Attachment hardware.*

(1) Eye bolts, shoulder bolts, or other bolts used to secure the pelvic restraint of a seat belt assembly to a motor vehicle shall withstand a force of 9,000 pounds or 4,080 kilograms when tested by the procedure specified in S5.2(c)(1), except that attachment bolts of a seat belt assembly designed for installation in specific models of motor vehicles in which the ends of two or more seat belt assemblies can not be attached to the vehicle by a single bolt shall have a breaking strength of not less than 5,000 pounds or 2,270 kilograms.

(2) Other attachment hardware designed to receive the ends of two seat belt assemblies shall withstand a tensile force of at least 6,000 pounds or 2,270 kilograms without fracture of any section when tested by the procedure specified in S5.2(c)(2).

(3) A seat belt assembly having single attachment hooks of the quick-disconnect type for connecting webbing to an eye bolt shall be provided with a retaining latch or keeper which shall not move more than 0.08 inch or

2 millimeters in either the vertical or horizontal direction when tested by the procedure specified in S5.2(c)(3).

(d) *Buckle release.*

(1) The buckle of a Type 1 or Type 2 seat belt assembly shall release when a force of not more than 30 pounds or 14 kilograms is applied, and the buckle of a Type 3 seat belt assembly shall release when a force of not more than 20 pounds or 9 kilograms is applied as prescribed in S5.2.

(2) A buckle designed for pushbutton application of buckle release force shall have a minimum area of 0.7 square inch or 4.5 square centimeters with a minimum linear dimension of 0.4 inch or 10 millimeters for applying the release force, or a buckle designed for lever application of buckle release force shall permit the insertion of a cylinder 0.4 inch or 10 millimeters in diameter and 1.5 inches or 38 millimeters in length to at least the midpoint of the cylinder along the cylinder's entire length in the actuation portion of the buckle release. A buckle having other design for release shall have adequate access for two or more fingers to actuate release. (32 F.R. 2415—Feb. 3, 1967; 34 F.R. 115—Jan. 4, 1969)

(3) [The buckle of a Type 1 or Type 2 seat belt assembly shall not release under a compressive force of 400 pounds applied as prescribed in paragraph S5.2(d)(3). The buckle shall be operable and shall meet the applicable requirements of paragraph S4.4 after the compressive force has been removed. (36 F.R. 4607—March 10, 1971. Effective: 9/1/71)]

(e) *Adjustment force.* The force required to decrease the size of a seat belt assembly shall not exceed 11 pounds or 5 kilograms when measured by the procedure specified in S5.2(e).

(f) *Tilt-lock adjustment.* The buckle of a seat belt assembly having tilt-lock adjustment shall lock the webbing when tested by the procedure specified in S5.2(f) at an angle of not less than 30 degrees between the base of the buckle and the anchor webbing.

(g) *Buckle latch.* The buckle latch of a seat belt assembly when tested by the procedure specified in S5.2(g) shall not fail, nor gall or wear to an extent that normal latching and un-

latching is impaired, and a metal-to-metal buckle shall separate when in any position of partial engagement by a force of not more than 5 pounds or 2.3 kilograms.

(h) *Nonlocking retractor.* The webbing of a seat belt assembly shall extend from a nonlocking retractor within 0.25 inch or 6 millimeters of maximum length when a tension is applied as prescribed in S5.2(h). A nonlocking retractor on upper-torso restraint shall be attached to the nonadjustable end of the assembly, the reel of the retractor shall be easily visible to an occupant while wearing the assembly, and the maximum retraction force shall not exceed 1.1 pounds or 0.5 kilogram in any strap or webbing that contacts the shoulder when measured by the procedure specified in S5.2(h), unless the retractor is attached to the free end of webbing which is not subjected to any tension during restraint of an occupant by the assembly.

(i) *Automatic-locking retractor.* The webbing of a seat belt assembly equipped with an automatic-locking retractor, when tested by the procedure specified in S5.2(i), shall not move more than 1 inch or 25 millimeters between locking positions of the retractor, and shall be retracted with a force under zero acceleration of not less than 0.6 pound or 0.27 kilogram when attached to pelvic restraint, and not less than 0.45 pound or 0.2 kilogram nor more than 1.1 pounds or 0.5 kilogram in any strap or webbing that contacts the shoulders of an occupant when the retractor is attached to upper torso restraint. An automatic locking retractor attached to upper torso restraint shall not increase the restraint on the occupant of the seat belt assembly during use in a vehicle traveling over rough roads as prescribed in S5.2(i).

(j) *Emergency-locking retractor.* [An emergency-locking retractor of a Type 1 or Type 2 seat belt assembly, when tested in accordance with the procedures specified in paragraph S5.2(j)—

(1) Shall lock before the webbing extends 1 inch when the retractor is subjected to an acceleration of 0.7g;

(2) Shall not lock, if the retractor is sensitive to webbing withdrawal, before the webbing extends 2 inches when the retractor is subjected to an acceleration of 0.3g or less;

(3) Shall not lock, if the retractor is sensitive to vehicle acceleration, when the retractor is rotated in any direction to any angle of 15° or less from its orientation in the vehicle;

(4) [Shall exert a retractive force of at least 0.6 pound under zero acceleration when attached only to the pelvic restraint. (39 F.R. 2771—January 24, 1974. Effective: 1/24/74)]

(5) Shall exert a retractive force of not less than 0.2 pound and not more than 1.1 pounds under zero acceleration when attached only to an upper torso restraint;

(6) Shall exert a retractive force of not less than 0.2 pound and not more than 1.5 pounds under zero acceleration when attached to a strap or webbing that restrains both the upper torso and the pelvis. (38 F.R. 22958—August 28, 1973. Effective: 8/28/73)]

(k) *Performance of retractor.* A retractor used on a seat belt assembly after subjection to the tests specified in S5.2(k) shall comply with applicable requirements in paragraphs (h) to (j) of this section and S4.4, except that the retraction force shall be not less than 50 percent of its original retraction force.

#### **S4.4 Requirements for assembly performance.**

(a) *Type 1 seat belt assembly.* The complete seat belt assembly including webbing, straps, buckles, adjustment and attachment hardware, and retractors shall comply with the following requirements when tested by the procedures specified in S5.3(a):

(1) The assembly loop shall withstand a force of not less than 5,000 pounds or 2,270 kilograms; that is, each structural component of the assembly shall withstand a force of not less than 2,500 pounds or 1,130 kilograms.

(2) The assembly loop shall extend not more than 7 inches or 18 centimeters when subjected to a force of 5,000 pounds or 2,270 kilograms; that is, the length of the assembly between anchorages shall not increase more than 14 inches or 36 centimeters.

(3) Any webbing cut by the hardware during test shall have a breaking strength at the cut of not less than 4,200 pounds or 1,910 kilograms.

(4) Complete fracture through any solid section of metal attachment hardware shall not occur during test.

(b) *Type 2 seat belt assembly.* The components of a Type 2 seat belt assembly including webbing, straps, buckles, adjustment and attachment hardware, and retractors shall comply with the following requirements when tested by the procedure specified in S5.3(b):

(1) The structural components in the pelvic restraint shall withstand a force of not less than 2,500 pounds or 1,130 kilograms.

(2) The structural components in the upper torso restraint shall withstand a force of not less than 1,500 pounds or 680 kilograms.

(3) The structural components in the assembly that are common to pelvic and upper torso restraints shall withstand a force of not less than 3,000 pounds or 1,360 kilograms.

(4) The length of the pelvic restraint between anchorages shall not increase more than 20 inches or 50 centimeters when subjected to a force of 2,500 pounds or 1,130 kilograms.

(5) The length of the upper torso restraint between anchorages shall not increase more than 20 inches or 50 centimeters when subjected to a force of 1,500 pounds or 680 kilograms.

(6) Any webbing cut by the hardware during test shall have a breaking strength of not less than 3,500 pounds or 1,590 kilograms at a cut in webbing of the pelvic restraint, or not less than 2,800 pounds or 1,270 kilograms at a cut in webbing of the upper torso restraint.

(7) Complete fracture through any solid section of metal attachment hardware shall not occur during test.

(c) *Type 3 seat belt assembly.* The complete seat belt assembly including webbing, straps, buckles, adjustment and attachment hardware, and retractors shall comply with the following requirements when tested by the procedures specified in S5.3(c):

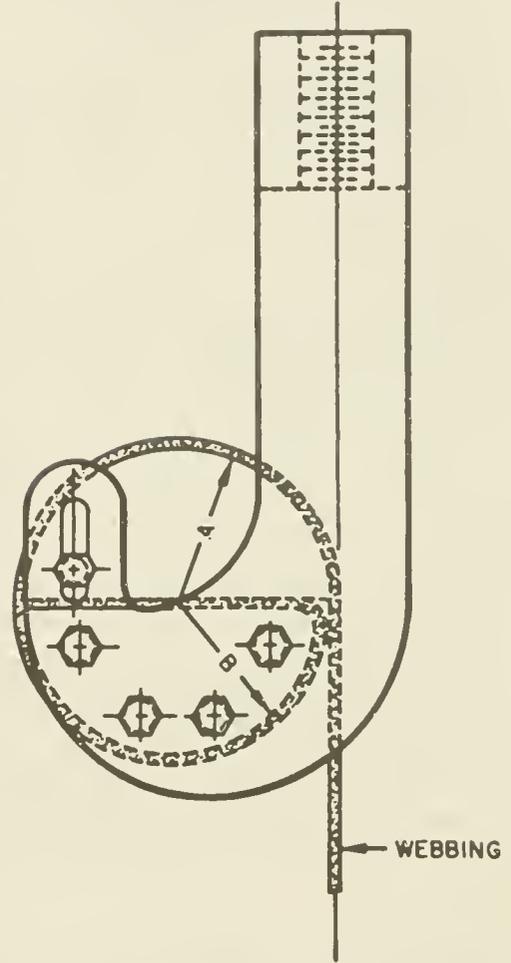
(1) The complete assembly shall withstand a force of 2,000 pounds or 900 kilograms.

(2) The complete assembly shall extend not more than 12 inches or 30 centimeters when subjected to a force of 2,000 pounds or 900 kilograms.

(3) Any webbing cut by the hardware during test shall have a breaking strength of not less than 1,050 pounds or 480 kilograms at a cut in webbing of pelvic or upper torso restraints, or not less than 2,800 pounds or 1,270

kilograms at a cut in webbing of seat back retainer or in webbing connecting pelvic and upper torso restraint at attachment hardware.

(4) Complete fracture through any solid section of metal attachment hardware shall not occur during test.



A 1 TO 2 INCHES OR 2.5 TO 5 CENTIMETERS  
B A MINUS 0.06 INCH 0.15 CENTIMETER

FIGURE 1

## 55. Demonstration Procedures.

### 55.1 Webbing.

(a) *Width.* The width of webbing from three seat belt assemblies shall be measured after conditioning for at least 24 hours in an atmosphere having relative humidity between 48 and 67 percent and a temperature of  $23 \pm 2$  degrees Celsius or  $73.4 \pm 3.6$  degree Fahrenheit. The tension

during measurement of width shall be not more than 5 pounds or 2 kilograms on webbing from a Type 1 or Type 3 seat belt assembly, and 2,200±100 pounds or 1,000±50 kilograms on webbing from a Type 2 seat belt assembly. The width of webbing from a Type 2 seat belt assembly may be measured during the breaking strength test described in paragraph (b) of this section.

(b) *Breaking strength.* Webbing from three seat belt assemblies shall be conditioned in accordance with paragraph (a) of this section and tested for breaking strength in a testing machine of suitable capacity verified to have an error of not more than 1 percent in the range of the breaking strength of the webbing by the Tentative Methods of Verification of Testing Machines, ASTM Designation: E4-64, published by the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pa. 19103.

The machine shall be equipped with split drum grips illustrated in Figure 1, having a diameter between 2 and 4 inches or 5 and 10 centimeters. The rate of grip separation shall be between 2 and 4 inches per minute or 5 and 10 centimeters per minute. The distance between the centers of the grips at the start of the test shall be between 4 and 10 inches or 10 and 25 centimeters. After placing the specimen in the grips, the webbing shall be stretched continuously at a uniform rate to failure. Each value shall be not less than the applicable breaking strength requirements in S4.2(b), but the median value shall be used for determining the retention of breaking strength in paragraphs (d), (e), and (f) of this section.

(c) *Elongation.* Elongation shall be measured during the breaking strength test described in paragraph (b) of this section by the following procedure: A preload between 44 and 55 pounds or 20 and 25 kilograms shall be placed on the webbing mounted in the grips of the testing machine and the needle points of an extensometer, in which the points remain parallel during test, are inserted in the center of the specimen. Initially the points shall be set at a known distance apart between 4 and 8 inches or 10 and 20 centimeters. When the force on the webbing reaches the value specified in S4.2(c), the increase in separation of the points of the extensometer shall

be measured and the percent elongation shall be calculated to the nearest 0.5 percent. Each value shall be not more than the appropriate elongation requirement in S4.2(c).

(d) *Resistance to abrasion.* The webbing from three seat belt assemblies shall be tested for resistance to abrasion by rubbing over the hexagon bar prescribed in Figure 2 in the following manner: The webbing shall be mounted in the apparatus shown schematically in Figure 2. One end of the webbing (A) shall be attached to a weight (B) which has a mass of 5.2±0.1

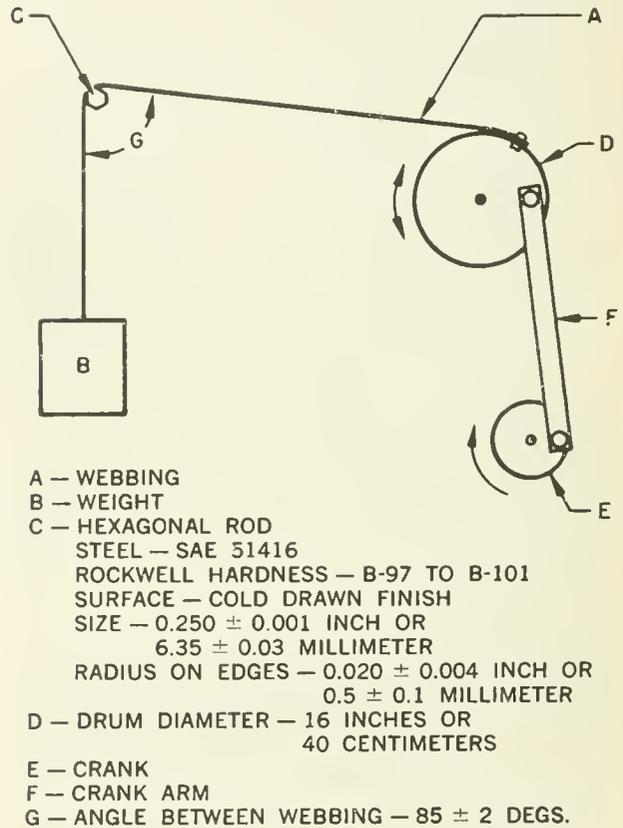


FIGURE 2

pounds or 2.35±0.05 kilograms, except that a mass of 3.3±0.1 pounds or 1.50±0.05 kilograms shall be used for webbing in pelvic and upper torso restraint of Type 3 seat belt assembly. The webbing shall be passed over the two new abrading edges of the hexagon bar (C) and the other end attached to an oscillating drum (D) which has a stroke of 13 inches or 33 centimeters.

Suitable guides shall be used to prevent movement of the webbing along the axis of hexagonal bar C. Drum D shall be oscillated for 5,000 strokes or 2,500 cycles at a rate of  $60 \pm 2$  strokes per minute or  $30 \pm 1$  cycles per minute. The abraded webbing shall be conditioned as prescribed in paragraph (a) of this section and tested for breaking strength by the procedure described in paragraph (b) of this section. The median values for the breaking strengths determined on abraded and unabraded specimens shall be used to calculate the percentage of breaking strength retained.

(e) *Resistance to light.* Webbing at least 20 inches or 50 centimeters in length from three seat belt assemblies shall be suspended vertically on the inside of the specimen rack in a Type E carbon-arc light-exposure apparatus described in Recommended Practice for Operation of Light- and Water-Exposure Apparatus (Carbon-Arc Type) for Artificial Weathering Test, ASTM Designation: E42-64, published by the American Society for Testing and Materials. The apparatus shall be operated without water spray at an air temperature of  $60 \pm 2$  degrees Celsius or  $140 \pm 3.6$  degrees Fahrenheit measured at a point  $1.0 \pm 0.2$  inch or  $25 \pm 5$  millimeters outside the specimen rack and midway in height. The temperature sensing element shall be shielded from radiation. The specimens shall be exposed to the light from the carbon arc for 100 hours and then conditioned as prescribed in paragraph (a) of this section. The colorfastness of the exposed and conditioned specimens shall be determined on the Geometric Gray Scale issued by the American Association of Textile Chemists and Colorists. The breaking strength of the specimens shall be determined by the procedure prescribed in paragraph (b) of this section. The median values for the breaking strengths determined on exposed and unexposed specimens shall be used to calculate the percentage of breaking strength retained.

(f) *Resistance to micro-organisms.* Webbing at least 20 inches or 50 centimeters in length from three seat belt assemblies shall be subjected successively to the procedures prescribed in Section 1C1—Water Leaching, Section 1C2—Volatilization, and Section 1B3—Soil Burial Test of AATCC Tentative Test Method 30—1957T,

Fungicides, Evaluation of Textiles; Mildew and Rot Resistance of Textiles, published by American Association of Textile Chemists and Colorists. After soil-burial for a period of 2 weeks, the specimen shall be washed in water, dried and conditioned as prescribed in paragraph (a) of this section. The breaking strengths of the specimens shall be determined by the procedure prescribed in paragraph (b) of this section. The median values for the breaking strengths determined on exposed and unexposed specimens shall be used to calculate the percentage of breaking strength retained.

NOTE.—This test shall not be required on webbing made from material which is inherently resistant to micro-organisms.

(g) *Colorfastness to crocking.* Webbing from three seat belt assemblies shall be tested by the procedure specified in Standard Test Method 8—1961, Colorfastness to Crocking (Rubbing) published by the American Association of Textile Chemists and Colorists.

(h) *Colorfastness by staining.* Webbing from three seat belt assemblies shall be tested by the procedure specified in Standard Test Method 107—1962, Colorfastness to Water, published by the American Association of Textile Chemists, and Colorists, with the following modifications: Distilled water shall be used, perspiration tester shall be used, the drying time in paragraph 4 of procedures shall be 4 hours, and section entitled "Evaluation Method for Staining (3)" shall be used to determine colorfastness to staining on the AATCC Chart for Measuring Transference of Colors.

## 55.2 Hardware

(a) *Corrosion resistance.* Three seat belt assemblies shall be tested by Standard Method of Salt Spray (Fog) Testing, ASTM Designation: B 117-64, published by the American Society for Testing and Materials. The period of test shall be 50 hours for all attachment hardware at or near the floor, consisting of two periods of 24 hours exposure to salt spray followed by 1 hour drying and 25 hours for all other hardware, consisting of one period of 24 hours exposure to salt spray followed by 1 hour drying. In the salt spray test chamber, the parts from the three assemblies shall be oriented differently, selecting those orientations most likely to develop corro-

sion on the larger areas. At the end of test, the seat belt assembly shall be washed thoroughly with water to remove the salt. After drying for at least 24 hours under standard laboratory conditions specified in S5.1(a) attachment hardware shall be examined for ferrous corrosion on significant surfaces, that is, all surfaces that can be contacted by a sphere 0.75 inch or 2 centimeters in diameter, and other hardware shall be examined for ferrous and nonferrous corrosion which may be transferred, either directly or by means of the webbing, to a person or his clothing during use of a seat belt assembly incorporating the hardware.

NOTE.—When attachment and other hardware are permanently fastened, by sewing or other means, to the same piece of webbing, separate assemblies shall be used to test the two types of hardware. The test for corrosion resistance shall not be required for attachment hardware made from corrosion-resistant steel containing at least 11.5 percent chromium or for attachment hardware protected with an electro-deposited coating of nickel, or copper and nickel, as prescribed in S4.3(a). The assembly that has been used to test the corrosion resistance of the buckle shall be used to measure adjustment force, tilt-lock adjustment, and buckle latch in paragraphs (e), (f) and (g), respectively, of this section, assembly performance in S5.3 and buckle release force in paragraph (d) of this section.

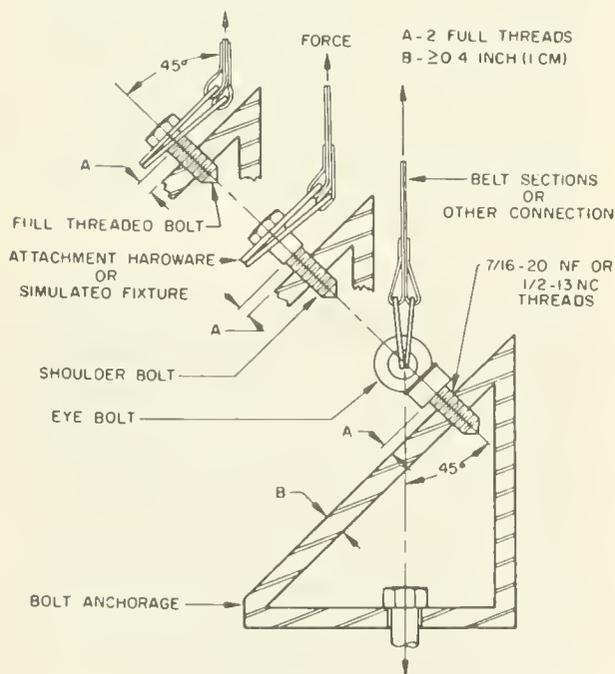


FIGURE 3

(b) *Temperature resistance.* Three seat belt assemblies having plastic or nonmetallie hardware or having retractors shall be subjected to the conditions prescribed in Procedure IV of Standard Methods of Test for Resistance of Plastics to Accelerated Service Conditions published by the American Society for Testing and Materials, under designation D 756-56. The dimension and weight measurement shall be omitted. Buckles shall be unlatched and retractors shall be fully retracted during conditioning. The hardware parts after conditioning shall be used for all applicable tests in S4.3 and S4.4.

(c) *Attachment hardware.*

(1) Attachment bolts used to secure the pelvic restraint of a seat belt assembly to a motor vehicle shall be tested in a manner similar to that shown in Figure 3. The load shall be applied at an angle of 45 degrees to the axis of the bolt through attachment hardware from the seat belt assembly, or through a special fixture which simulates the loading applied by the attachment hardware. The attachment hardware or simulated fixture shall be fastened by the bolt to the anchorage shown in Figure 3, which has a standard 7/16-20 UNF-2B or 1/2-13 UNC-2B threaded hole in a hardened steel plate at least 0.4 inch or 1 centimeter in thickness. The bolt shall be installed with 2 full threads exposed from the fully seated position. The appropriate force required by S4.3(e)(1) shall be applied. A bolt from each of three seat belt assemblies shall be tested.

(2) Attachment hardware, other than bolts, designed to receive the ends of two seat belt assemblies shall be subjected to a tensile force of 6,000 pounds or 2,720 kilograms in a manner simulating use. The hardware shall be examined for fracture after the force is released. Attachment hardware from three seat belt assemblies shall be tested.

(3) Single attachment hook for connecting webbing to any eye bolt shall be tested in the following manner: The hook shall be held rigidly so that the retainer latch or keeper, with cotter pin or other locking device in place, is in a horizontal position as shown in Figure 4. A force of  $150 \pm 2$  pounds or  $68 \pm 1$  kilograms shall be applied vertically as near as

possible to the free end of the retainer latch, and the movement of the latch by this force at the point of application shall be measured. The vertical force shall be released, and a force of  $150 \pm 2$  pounds or  $68 \pm 1$  kilograms shall be applied horizontally as near as possible to the free end of the retainer latch. The movement of the latch by this force at the point of load application shall be measured. Alternatively, the hook may be held in other positions, provided the forces are applied and the movements of the latch are measured at the points indicated in Figure 4. A single attachment hook from each of three seat belt assemblies shall be tested. (32 F.R. 2415—Feb. 3, 1967; 34 F.R. 115—Jan. 4, 1969)】

(d) *Buckle release.*

【(1) Three seatbelt assemblies shall be tested to determine compliance with the maximum buckle release force requirements, following the assembly test in S5.3. After subjection to the force applicable for the assembly being tested, the force shall be reduced and maintained at 150 pounds on the assembly loop of a Type 1 seatbelt assembly, 75 pounds on the components of a Type 2 seatbelt assembly, or 45 pounds on a Type 3 seatbelt assembly. The buckle release force shall be measured by applying a force on the buckle in a manner and direction typical of those which would be employed by a seatbelt occupant. For pushbutton-release buckles, the force shall be applied at least 0.125 inch from the edge of the push-button access opening of the buckle in a direction that produces maximum releasing effect. For lever-release buckles, the force

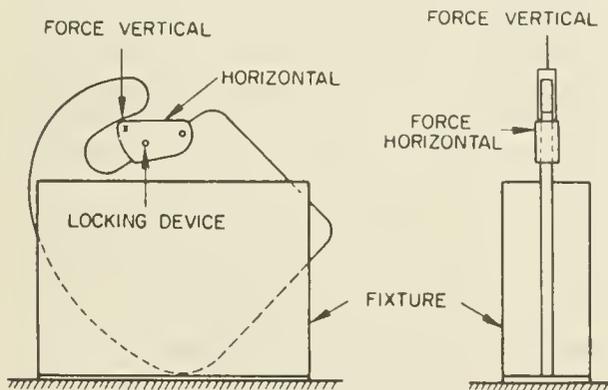


FIGURE 4  
SINGLE ATTACHMENT HOOK

shall be applied on the centerline of the buckle level or finger tab in a direction that produces maximum releasing effect. (36 F.R. 4607—March 10, 1971. Effective: 9/1/71)】

(2) The area for application of release force on pushbutton actuated buckle shall be measured to the nearest 0.05 square inch or 0.3 square centimeter. The cylinder specified in S4.3(d) shall be inserted in the actuation portion of a lever release buckle for determination of compliance with the requirement. A buckle with other release actuation shall be examined for access of release by fingers.

(3) 【The buckle of a Type 1 or Type 2 seatbelt assembly shall be subjected to a compressive force of 400 pounds applied anywhere on a test line that is coincident with the centerline of the belt extended through the buckle or on any line that extends over the center of the release mechanism and intersects the extended centerline of the belt at an angle of  $60^\circ$ . The load shall be applied by using a curved cylindrical bar having a cross section diameter of 0.75 inch and a radius of curvature of 6 inches, placed with its longitudinal centerline along the test line and its center directly above the point on the buckle to which the load will be applied. The buckle shall be latched, and a tensile force of 75 pounds shall be applied to the connected webbing during the application of the compressive force. Buckles from three seatbelt assemblies shall be tested to determine compliance with paragraph S4.3(d)(3). (36 F.R. 4607—March 10, 1971. Effective: 9/1/71)】

(e) *Adjustment force.* Three seat belt assemblies shall be tested for adjustment force on the webbing at the buckle, or other manual adjusting device normally used to adjust the size of the assembly. With no load on the anchor end, the webbing shall be drawn through the adjusting device at a rate of  $20 \pm 2$  inches per minute or  $50 \pm 5$  centimeters per minute and the maximum force shall be measured to the nearest 0.25 pound or 0.1 kilogram after the first 1.0 inch or 25 millimeters of webbing movement. The webbing shall be precycled 10 times prior to measurement.

(f) *Tilt-lock adjustment.* This test shall be made on buckles or other manual adjusting devices having tilt-lock adjustment normally used

to adjust the size of the assembly. Three buckles or devices shall be tested. The base of the adjustment mechanism and the anchor end of the webbing shall be oriented in planes normal to each other. The webbing shall be drawn through the adjustment mechanism in a direction to increase belt length at a rate of  $20 \pm 2$  inches per minute or  $50 \pm 5$  centimeters per minute while the plane of the base is slowly rotated in a direction to lock the webbing. Rotation shall be stopped when the webbing locks, but the pull on the webbing shall be continued until there is a resistance of at least 20 pounds or 9 kilograms. The locking angle between the anchor end of the webbing and the base of the adjustment mechanism shall be measured to the nearest degree. The webbing shall be precycled 10 times prior to measurement.

(g) *Buckle latch.* The buckles from three seat belt assemblies shall be opened fully and closed at least 10 times. Then the buckles shall be clamped or firmly held against a flat surface so as to permit normal movement of buckle parts, but with the metal mating plate (metal-to-metal buckles) or webbing end (metal-to-webbing buckles) withdrawn from the buckle. The release mechanism shall be moved 200 times through the maximum possible travel against its stop with a force of  $30 \pm 3$  pounds or  $14 \pm 1$  kilograms at a rate not to exceed 30 cycles per minute. The buckle shall be examined to determine compliance with the performance requirements of S4.3(g). A metal-to-metal buckle shall be examined to determine whether partial engagement is possible by means of any technique representative of actual use. If partial engagement is possible, the maximum force of separation when in such partial engagement shall be determined.

(h) *Nonlocking retractor.* After the retractor is cycled 10 times by full extension and retraction of the webbing, the retractor and webbing shall be suspended vertically and a force of 4 pounds or 1.8 kilograms shall be applied to extend the webbing from the retractor. The force shall be reduced to 3 pounds or 1.4 kilograms when attached to a pelvic restraint, or to 1.1 pounds or 0.5 kilogram per strap or webbing that contacts the shoulder of an occupant when retractor is attached to an upper torso restraint. The residual extension of the webbing shall be measured

by manual rotation of the retractor drum or by disengaging the retraction mechanism. Measurements shall be made on three retractors. The location of the retractor attached to upper torso restraint shall be examined for visibility of reel during use of seat belt assembly in a vehicle.

NOTE.—This test shall not be required on a nonlocking retractor attached to the free-end of webbing which is not subjected to any tension during restraint of an occupant by the assembly.

(i) *Automatic-locking retractor.* Three retractors shall be tested in a manner to permit the retraction force to be determined exclusive of the gravitational forces on hardware or webbing being retracted. The webbing shall be fully extended from the retractor. While the webbing is being retracted, the average force of retraction within plus or minus 2 inches or 5 centimeters of 75 percent extension (25 percent retraction) shall be determined and the webbing movement between adjacent locking segments shall be measured in the same region of extension. A seat belt assembly with automatic locking retractor in upper torso restraint shall be tested in a vehicle in a manner prescribed by the installation and usage instructions. The retraction force on the occupant of the seat belt assembly shall be determined before and after traveling for 10 minutes at a speed of 15 miles per hour or 24 kilometers per hour or more over a rough road (e.g., Belgian block road) where the occupant is subjected to displacement with respect to the vehicle in both horizontal and vertical directions. Measurements shall be made with the vehicle stopped and the occupant in the normal seated position.

(j) *Emergency-locking retractor.* [A retractor shall be tested in a manner that permits the retraction force to be determined exclusive of the gravitational forces on hardware or webbing being retracted. The webbing shall be fully extended from the retractor, passing over or through any hardware or other material specified in the installation instructions. While the webbing is being retracted, the lowest force of retraction within plus or minus 2 inches of 75 percent extension shall be determined. A retractor that is sensitive to webbing withdrawal shall be subjected to an acceleration of  $0.3g$  within a period of 50 ms. while the webbing is

at 75 percent extension, to determine compliance with S4.3(j)(2). The retractor shall be subjected to an acceleration of 0.7g within a period of 50 milliseconds, while the webbing is at 75 percent extension, and the webbing movement before locking shall be measured under the following conditions: For a retractor sensitive to webbing withdrawal, the retractor shall be accelerated in the direction of webbing retraction while the retractor drum's central axis is oriented horizontally and at angles of 45°, 90°, 135°, and 180° to the horizontal plane. For a retractor sensitive to vehicle acceleration, the retractor shall be—(38 F.R. 22958—August 28, 1973. Effective: 8/28/73)】

(1) accelerated in the horizontal plane in two directions normal to each other, while the retractor drum's central axis is oriented at the angle at which it is installed in the vehicle; and,

(2) accelerated in three directions normal to each other while the retractor drum's central axis is oriented at angles of 45°, 90°, 135°, and 180° from the angle at which it is installed in the vehicle, unless the retractor locks by gravitational force when tilted in any direction to any angle greater than 45° from the angle at which it is installed in the vehicle.

(k) *Performance of retractor.* After completion of the corrosion-resistance test described in paragraph (a) of this section, the webbing shall be fully extended and allowed to dry for at least 24 hours under standard laboratory conditions specified in S5.1(a). The retractor shall be examined for ferrous and nonferrous corrosion which may be transferred, either directly or by means of the webbing, to a person or his clothing during use of a seat belt assembly incorporating the retractor, and for ferrous corrosion on significant surfaces if the retractor is part of the attachment hardware. The webbing shall be withdrawn manually and allowed to retract for 25 cycles. The retractor shall be mounted in an apparatus capable of extending the webbing fully, applying a force of 20 pounds or 9 kilograms at full extension, and allowing the webbing to retract freely and completely. The webbing shall be withdrawn from the retractor and allowed to retract repeatedly in this apparatus until 2,500 cycles are completed. The retractor

and webbing shall then be subjected to the temperature resistance test prescribed in paragraph (b) of this section. The retractor shall be subjected to 2,500 additional cycles of webbing withdrawal and retraction. Then, the retractor and webbing shall be subjected to dust in a chamber similar to one illustrated in Figure 8 containing about 2 pounds or 0.9 kilogram of coarse grade dust conforming to the specification given in SAE Recommended Practice, Air Cleaner Test Code—SAE J726a, published by the Society of Automotive Engineers. The dust shall be agitated every 20 minutes for 5 seconds by compressed air, free of oil and moisture, at a gage pressure of  $80 \pm 8$  pounds per square inch or  $5.6 \pm 0.6$  kilograms per square centimeter entering through an orifice  $0.060 \pm 0.004$  inch or  $1.5 \pm 0.1$  millimeters in diameter. The webbing shall be

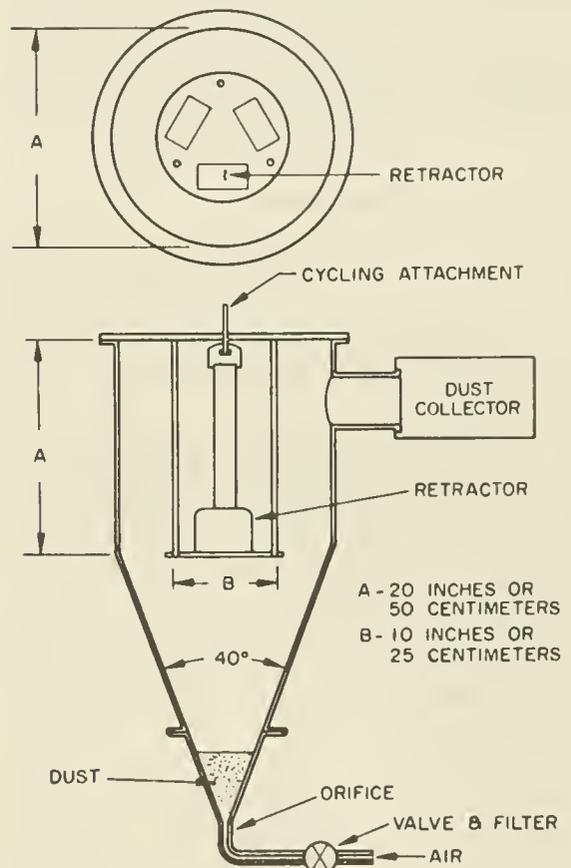


FIGURE 8

[ 34 F.R. 115  
January 4, 1969 ]

extended to the top of the chamber and kept extended at all times except that the webbing shall be subjected to 10 cycles of complete retraction and extension within 1 to 2 minutes after each agitation of the dust. At the end of 5 hours, the assembly shall be removed from the chamber. The webbing shall be fully withdrawn from the retractor manually and allowed to retract completely for 25 cycles. An automatic-locking retractor or a nonlocking retractor attached to pelvic restraint shall be subjected to 5,000 additional cycles of webbing withdrawal and retraction. An emergency-locking retractor or a nonlocking retractor attached to upper torso restraint shall be subjected to 45,000 additional cycles of webbing withdrawal and retractions between 50 and 100 percent extension. The locking mechanism of an emergency locking retractor shall be actuated at least 10,000 times within 50 to 100 percent extension of webbing during the 50,000 cycles. At the end of test, compliance of the retractors with applicable requirements in S4.3 (h), (i), and (j) shall be determined. Three retractors shall be tested for performance.

### 55.3 Assembly Performance

(a) *Type 1 seat belt assembly.* Three complete seat belt assemblies, including webbing, straps, buckles, adjustment and attachment hardware, and retractors, arranged in the form of a loop as shown in Figure 5, shall be tested in the following manner:

(1) The testing machine shall conform to the requirements specified in S5.1(b). A double-roller block shall be attached to one head of the testing machine. This block shall consist of 2 rollers 4 inches or 10 centimeters in diameter and sufficiently long so that no part of the seat belt assembly touches parts of the block other than the rollers during test. The rollers shall be mounted on anti-friction bearings and spaced 12 inches or 30 centimeters between centers, and shall have sufficient capacity so that there is no brinelling, bending or other distortion of parts which may affect the results. An anchorage bar shall be fastened to the other head of the testing machine.

(2) The attachment hardware furnished with the seat belt assembly shall be attached to the anchorage bar. The anchor points shall

be spaced so that the webbing is parallel in the two sides of the loop. The attaching bolts shall be parallel to, or at an angle of 45 to 90 degrees to the webbing, whichever results in an angle nearest to 90 degrees between webbing and attachment hardware except that eye bolts shall be vertical, and attaching bolts or nonthreaded anchorages of a seat belt assembly designed for use in specific models of motor vehicles shall be installed to produce the maximum angle in use indicated by the installation instructions, utilizing special fixtures if necessary to simulate installation in the motor vehicle. Rigid adapters between anchorage bar and attachment hardware shall be used if necessary to locate and orient the adjustment hardware. The adapters shall have a flat support face perpendicular to the threaded hole for the attaching bolt and adequate in area

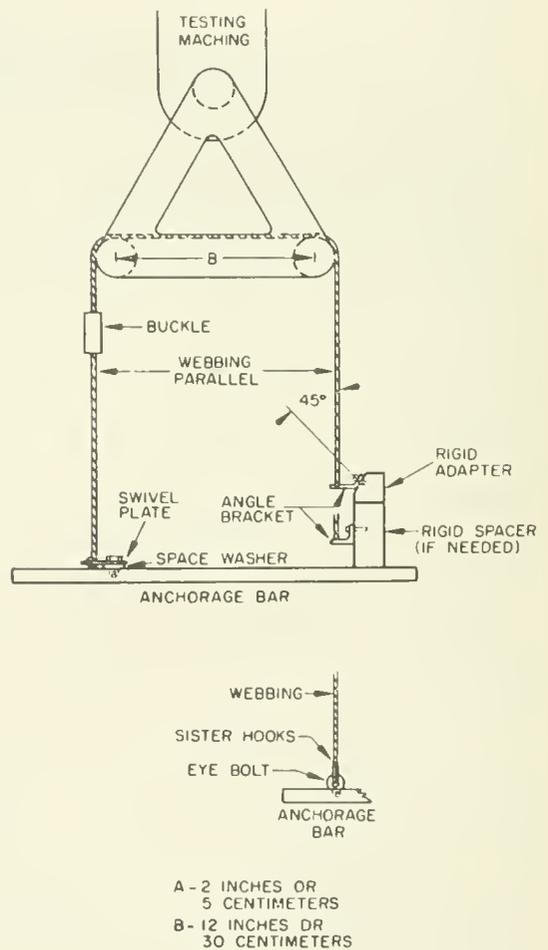


FIGURE 5

to provide full support for the base of the attachment hardware connected to the webbing. If necessary, a washer shall be used under a swivel plate or other attachment hardware to prevent the webbing from being damaged as the attaching bolt is tightened.

(3) The length of the assembly loop from attaching bolt to attaching bolt shall be adjusted to about 51 inches or 130 centimeters, or as near thereto as possible. A force of 55 pounds or 25 kilograms shall be applied to the loop to remove any slack in webbing at hardware. The force shall be removed and the heads of the testing machine shall be adjusted for an assembly loop between 48 and 50 inches or 122 and 127 centimeters in length. The length of the assembly loop shall then be adjusted by applying a force between 20 and 22 pounds or 9 and 10 kilograms to the free end of the webbing at the buckle, or by the retraction force of an automatic-locking or emergency-locking retractor. A seat belt assembly that cannot be adjusted to this length shall be adjusted as closely as possible. An automatic-locking or emergency-locking retractor when included in a seat belt assembly shall be locked at the start of the test with a tension on the webbing slightly in excess of the retractive force in order to keep the retractor locked. The buckle shall be in a location so that it does not touch the rollers during test, but to facilitate making the buckle release test in S5.2(d) the buckle should be between the rollers or near a roller in one leg.

(4) The heads of the testing machine shall be separated at a rate between 2 and 4 inches per minute or 5 and 10 centimeters per minute until a force of  $5,000 \pm 50$  pounds or  $2,270 \pm 20$  kilograms is applied to the assembly loop. The extension of the loop shall be determined from measurements of head separation before and after the force is applied. The force shall be decreased to  $150 \pm 10$  pounds or  $68 \pm 4$  kilograms and the buckle release force measured as prescribed in S5.2(d).

(5) After the buckle is released, the webbing shall be examined for cutting by the hardware. If the yarns are partially or completely severed in a line for a distance of 10 percent or more of the webbing width, the cut

webbing shall be tested for breaking strength as specified in S5.1(b) locating the cut in the free length between grips. If there is insufficient webbing on either side of the cut to make such a test for breaking strength, another seat belt assembly shall be used with the webbing repositioned in the hardware. A tensile force of  $2,500 \pm 25$  pounds or  $1,135 \pm 10$  kilograms shall be applied to the components or a force of  $5,000 \pm 50$  pounds or  $2,270 \pm 20$  kilograms shall be applied to an assembly loop. After the force is removed, the breaking strength of the cut webbing shall be determined as prescribed above.

(6) If a Type 1 seat belt assembly includes an automatic-locking retractor or an emergency-locking retractor, the webbing and retractor shall be subjected to a tensile force of  $2,500 \pm 25$  pounds or  $1,135 \pm 10$  kilograms with the webbing fully extended from the retractor.

(7) If a seat belt assembly has a buckle in which the tongue is capable of inverted insertion, one of the three assemblies shall be tested with the tongue inverted.

(b) *Type 2 seat belt assembly.* Components of three seat belt assemblies shall be tested in the following manner:

(1) The pelvic restraint between anchorages shall be adjusted to a length between 48 and 50 inches or 122 and 127 centimeters, or as near this length as possible if the design of the pelvic restraint does not permit its adjustment to this length. An automatic-locking or emergency-locking retractor when included in a seat belt assembly shall be locked at the start of the test with a tension on the webbing slightly in excess of the retractive force in order to keep the retractor locked. The attachment hardware shall be oriented to the webbing as specified in paragraph (a) (2) of this section and illustrated in Figure 5. A tensile force of  $2,500 \pm 25$  pounds or  $1,135 \pm 10$  kilograms shall be applied on the components in any convenient manner and the extension between anchorages under this force shall be measured. The force shall be reduced to  $75 \pm 5$  pounds or  $34 \pm 2$  kilograms and the buckle release force measured as prescribed in S5.2(d).

(2) The components of the upper torso restraint shall be subjected to a tensile force of  $1,500 \pm 15$  pounds or  $680 \pm 5$  kilograms following the procedure prescribed above for testing pelvic restraint and the extension between anchorages under this force shall be measured. If the testing apparatus permits, the pelvic and upper torso restraints may be tested simultaneously. The force shall be reduced to  $75 \pm 5$  pounds or  $34 \pm 2$  kilograms and the buckle release force measured as prescribed in S5.2(d).

(3) Any component of the seat belt assembly common to both pelvic and upper torso restraint shall be subjected to a tensile force of  $3,000 \pm 30$  pounds or  $1,360 \pm 15$  kilograms.

(4) After the buckle is released in tests of pelvic and upper torso restraints, the webbing shall be examined for cutting by the hardware. If the yarns are partially or completely severed in a line for a distance of 10 percent or more of the webbing width, the cut webbing shall be tested for breaking strength as specified in S5.1(b) locating the cut in the free length between grips. If there is insufficient webbing on either side of the cut to make such a test for breaking strength, another seat belt assembly shall be used with the webbing repositioned in the hardware.

The force applied shall be  $2,500 \pm 25$  pounds or  $1,135 \pm 10$  kilograms for components of pelvic restraint, and  $1,500 \pm 15$  pounds or  $680 \pm 5$  kilograms for components of upper torso restraint. After the force is removed, the breaking strength of the cut webbing shall be determined as prescribed above.

(5) If a Type 2 seat belt assembly includes an automatic-locking retractor or an emergency-locking retractor, the webbing and retractor shall be subjected to a tensile force of  $2,500 \pm 25$  pounds or  $1,135 \pm 10$  kilograms with the webbing fully extended from the retractor, or to a tensile force of  $1,500 \pm 15$  pounds or  $680 \pm 5$  kilograms with the webbing fully extended from the retractor if the design of the assembly permits only upper torso restraint forces on the retractor.

(6) If a seat belt assembly has a buckle in which the tongue is capable of inverted inser-

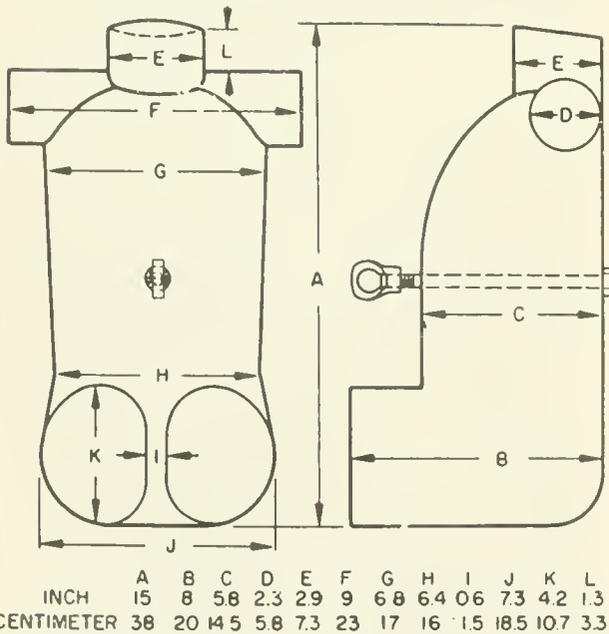
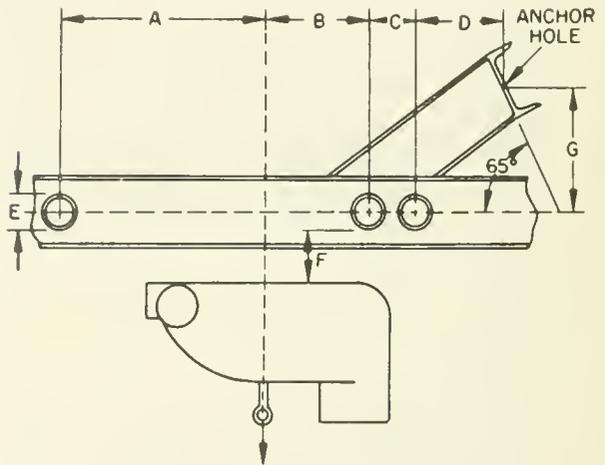


FIGURE 6



	INCH	CENTIMETER
A	12	30
B	6	15
C	2.8	7
D	5.2	13
E	2	5
F	4	10
G	7	18

FIGURE 7

tion, one of the three assemblies shall be tested with the tongue inverted.

(c) *Type 3 seat belt assembly.* Three seat belt assemblies including webbing, straps, buckles,

adjustment and attachment hardware and retractors shall be tested in the following manner:

[(1) The testing machine shall conform to the requirements specified in S5.1(b). A torso having the dimensions shown in Figure 6, configured so that it does not contact a buckle in such a way as to affect the buckle release force, shall be attached to one head of the testing machine through a universal joint which is guided in essentially a frictionless manner to minimize lateral forces on the testing machine. An anchorage and simulated seat back shall be attached to the other head as shown in Figure 7. (36 F.R. 5793—March 27, 1971. Effective: 9/1/71)]

(2) Attachment hardware for an assembly having single webbing connection shall be fastened at the anchor hole shown in Figure 7 which is centered along the length of the anchorage bar. Attachment hardware for an assembly having two webbing connectors shall be fastened at anchor holes 16 inches or 40 centimeters apart on the anchorage bar, equidistant from the center. Attachment hardware for an assembly whose design precludes such attachment shall be fastened in accordance with the installation instructions. The back of the torso shall be positioned in a plane parallel to and at a distance of 4 inches or 10 centimeters from the plane of the simulated seat back. The seat belt assembly shall be installed on the torso in accordance with installation instructions and the webbing to the attachment hardware shall be adjusted with effectively no slack. The heads of the testing machine shall be separated at a rate of between 2 and 4 inches per minute or 5 and 10 centimeters per minute until a force of 2,000 pounds or 900 kilograms is applied. The extension of the seat belt assembly shall be determined from measurement of head separation in the testing machine before and after the force is applied. The force shall be reduced to  $45 \pm 5$  pounds or  $20 \pm 2$  kilograms and the release force of the buckle or buckles measured as prescribed in S5.2(d). A seat back retainer not connected to a pelvic or upper torso restraint shall be subjected separately to a force of 2,000 pounds or 900 kilograms.

(3) After the buckle is released, the webbing shall be examined for cutting by the hardware. If the yarns are partially or completely severed in a line for a distance of 10 percent or more of the webbing width, the cut webbing shall be tested for breaking strength as specified in S5.1(b) locating the cut in the free length between grips. If there is insufficient webbing on either side of the cut to make such a test for breaking strength, another seat belt assembly shall be used with the webbing repositioned in the hardware. A tensile force shall be applied to the components as follows: Webbing in pelvic or upper torso restraint— $700 \pm 7$  pounds or  $320 \pm 3$  kilograms; webbing in seat back retainer or webbing connecting pelvic and upper torso restraint to attachment hardware— $1,500 \pm 15$  pounds or  $680 \pm 7$  kilograms. After the force is removed, the breaking strength of the cut webbing shall be determined as prescribed above.

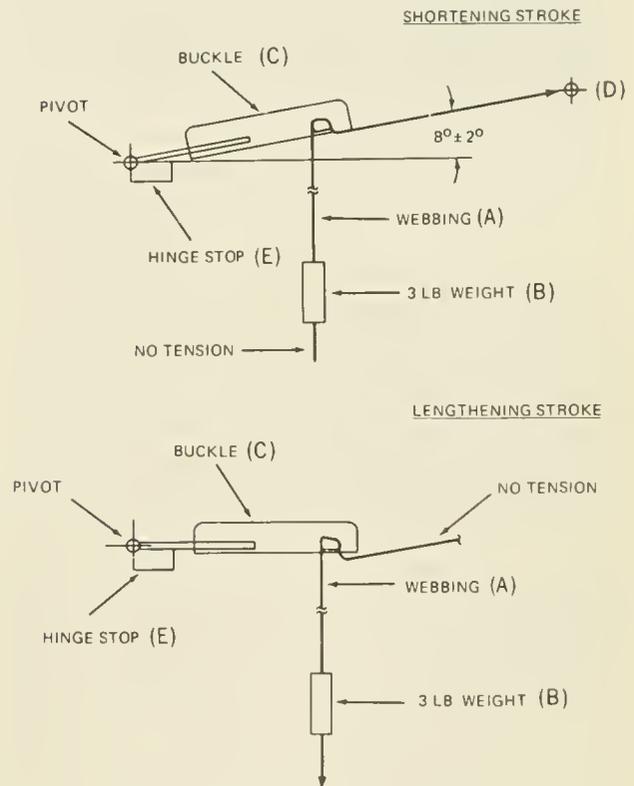


FIGURE 9

(4) If a seat belt assembly has a buckle in which the tongue is capable of inverted insertion, one of the three assemblies shall be tested with the tongue inverted.

[(d) *Resistance to buckle abrasion.* Seatbelt assemblies shall be tested for resistance to abrasion by each buckle or manual adjusting device normally used to adjust the size of the assembly. The webbing of the assembly to be used in this test shall be exposed for 4 hours to an atmosphere having relative humidity of 65 percent and temperature of 70° F. The webbing shall be pulled back and forth through the buckle or manual adjusting device as shown schematically in Figure 9. The anchor end of the webbing (A) shall be attached to a weight (B) of 3 pounds. The webbing shall pass through the buckle (C), and the other end (D) shall be attached to a reciprocating device so that the webbing forms an angle of 8° with the hinge stop (E). The reciprocating device shall be operated for 2,500 cycles at a rate of 18 cycles per minute with a stroke length of 8 inches. (See correction in 34 F.R. 5490—March 24, 1971). The abraded webbing shall be tested for breaking strength by the procedure described in paragraph S5.1(b).

(36 F.R. 4607—March 10, 1971. Effective: 9/1/71)]

#### Interpretation

This Standard applies to seat belt assemblies manufactured after February 28, 1967, for use in passenger cars, multipurpose passenger vehicles, trucks and buses. Since the effective date of Motor Vehicle Safety Standard No. 208, which provides that a Type 1 or Type 2 seat belt assembly that conforms to Motor Vehicle Safety Standard No. 209 shall be installed in each passenger car seat position, is January 1, 1968, seat belt assemblies installed in passenger cars until that date need not conform to Standard No. 209 unless the seat belt assemblies have been manufactured after February 28, 1967. (32 F.R. 3390—March 1, 1967)

**32 F.R. 2415**  
**February 3, 1967**

**34 F.R. 115\***  
**January 4, 1969**

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\*The Rule as published February 3, 1967 incorporated the Dept. of Commerce seatbelt standard by reference. The notice of January 4, 1969, simply published the full text of that standard without amending it.

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 210

### Seat Belt Assembly Anchorages—Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses (Docket No. 2-14; Notice No. 4)

An amendment to Motor Vehicle Safety Standard No. 210, Seat Belt Assembly Anchorages, was published on October 1, 1970 (35 F.R. 15293). Thereafter, pursuant to § 553.35 of the procedural rules (49 CFR 553.35, 35 F.R. 5119), petitions for reconsideration were filed by Rolls Royce, Ltd., International Harvester Co., Chrysler Corp., Ford Motor Co., General Motors Corp., the Automobile Manufacturers Association, Toyota Motor Co., Ltd., American Motors, Jeep Corp., Chrysler United Kingdom, Ltd., and Checker Motors Corp.

In response to information contained in the petitions, and other considerations, certain requirements of the standard are hereby amended and the effective date of the standard with respect to passenger cars is postponed until January 1, 1972. The petitions for relief from certain other requirements of the standard are denied.

1. The effective date of the amended standard with respect to passenger cars was to have been January 1, 1971. Each petitioner claimed to be unable to produce vehicles conforming to the amended standard by that date. Those who provided lead time information indicated that several months would be needed, with estimates ranging from March 31, 1971, for Rolls Royce, to January 1, 1972, for a number of manufacturers. A January 1972 effective date would have the advantage of coinciding with the effective date proposed for the closely related interim standard on occupant crash protection (Docket 69-7, Notice 6, 35 F.R. 14941). Since the amendments with respect to passenger cars are intended primarily to enhance the enforceability of the standard rather than to provide new levels of safety, it

has been determined that good cause has been shown for establishing an effective date for passenger cars of January 1, 1972.

With a single exception, the requests for postponement of the effective date of the standard with respect to multipurpose passenger vehicles, trucks, and buses, are denied. One of the primary reasons for amending the standard was to extend the protection afforded by seat belts to occupants of these types of vehicles. A postponement of effective date would leave these vehicles completely without anchorage requirements for an additional 6 months. Although manufacturers who have been installing anchorages may find it necessary to reexamine the strength and location of their anchorages, this is not considered a sufficient ground for postponing the effective date.

International Harvester requested a postponement until January 1, 1972, in the date on which upper torso restraint anchorages will be required on seats other than front seats in multipurpose passenger vehicles. On consideration of the lead time difficulties that have been demonstrated by this manufacturer, the Director regards the request as reasonable and has decided to grant the requested postponement.

2. A number of petitions requested reconsideration of the sections dealing with anchorage location. Section S4.3.1.4 of the standard states that "Anchorages for an individual seat belt assembly shall be located at least 13.75 inches apart laterally for outboard seats and at least 6.75 inches apart laterally for other seats."

General Motors stated that several of its vehicles have anchorages for the center seating position that are 6.50 inches apart, that some of

the anchorages for outboard seats are less than 13.75 inches apart, and that there is no basis either for setting a minimum spacing, or for setting different minimum spacings for different seating positions. Similar comments were made by AMA, Chrysler, Ford and American Motors.

As originally issued, Standard No. 210 had required anchorages to be "as near as practicable, 15 inches apart laterally." To make the standard more precise and more easily enforceable, the notice of September 20, 1969 (34 F.R. 14658), proposed to delete the qualifying language and to require that anchorages be 15 inches apart laterally. The comments indicated that anchorages for center seating positions, particularly the front positions, would require complete relocation. The available data on the effects of anchorage spacing were not regarded as conclusive enough to justify imposing this burden on the manufacturers, and the spacing for anchorages for inboard locations was accordingly reduced to 6.75 inches in the amended standard. Without clearer biomechanical data, the intent was to adopt the prevailing industry minimum as the standard. The same rationale applied to outboard seating position, where the 15-inch spacing was reduced to 13.75 inches.

It now appears that both spacing employed in the amended standard failed to reflect prevailing locations. The Director is accordingly amending section S4.3.1.4 to establish a minimum spacing of 6.50 inches.

A further problem with the spacing requirement arises from the use of "anchorage" as the reference point for measurement. As long as the standard used the qualifying language "as near as practicable," there was no difficulty. Removal of that phrase by the notice of September 20, 1969, created a problem of interpretation that escaped comment until after issuance of the amended standard. Several petitioners commented that they do not know what point to use for measurement. The director concedes the deficiency, and accordingly amends section S4.3.1.4 to specify that the spacing is "measured between the vertical centerlines of the bolt holes."

In conjunction with its request for a reduction of the spacing requirement, General Motors stated that where structural members between the

anchorage and the seating position have the effect of spreading the seat belt loop apart, the spacing should be measured between the widest contact points on the structure. Since the strength of these structural members is not regulated, there is no assurance that their performance in a crash will be equal to that of properly spaced anchorages. The request offers no improvement in occupant crash protection, and may, in fact, diminish such protection. The request is therefore denied.

3. The amended standard's other location requirements concern the placement of anchorages to achieve desirable seat belt angles. Sections S4.3.1.1 and S4.3.1.3 each use the "nearest belt contact point on the anchorage" as the lower point defining the line whose angle is to be measured. Several petitions expressed uncertainty as to the point described, and on reconsideration the Director agrees that clarification is needed.

In the notice of proposed rule making that preceded the amended standard (34 F.R. 14658, Sept. 20, 1969) the line had been run to the "anchorage". This usage lacked precision, as stated by several comments. In an attempt to define a line that would closely approximate the actual belt angle, the language in question was adopted. The problem lies in the use of the word "anchorage", since in most installations the belt does not actually contact the anchorage. The point intended was, in fact, the nearest contact point of the belt webbing with the hardware that attaches it to the anchorage. In the typical installation, this point would be on an angle plate bolted to the anchorage. Sections S4.3.1.1 and S4.3.1.3 are accordingly amended to use the phrase "the nearest contact point of the belt with the hardware attaching it to the anchorage."

4. The test procedures of S5.1 and S5.2 were the subject of several requests for reconsideration. Most petitioners stated that the test was not representative of crash conditions, and several suggested that it should be displaced by a dynamic test. Times suggested for such a dynamic test ranged from 0.1 second to 1.0 second, and were said to be the tests used by the petitioners, or by one or another of the international standards organizations. The requirement for a 10-second hold period at maximum

load attracted the most strongly adverse comment.

From its inception, Standard No. 210 has contemplated a static test. The notice of proposed rule making of September 20, 1969, proposed a test that was clearly static, in that it involved a slow rate of load application (2 to 4 inches per minute). In response to comments that the rate was too slow, and to avoid problems of interpretation as to where the rate of pull was to be measured, the procedures were amended to specify the rate of load application in time rather than distance, with the full load reached in a period of from 0.1 to 30 seconds. It should be noted that the vehicle must be capable of meeting the requirements when tested at any rate within this range. To insure that the basic strength of the structure would be measured whatever the shape of the load application curve, a hold period of 10 seconds was specified. The procedures of the amended standard do no more than give more specific form to the test contemplated in the original standard.

The postponement of the effective date of the amended standard will provide additional time for passenger car manufacturers to assure themselves of compliance with the standard. After consideration of the issues raised in the petitions for reconsideration, the Director has concluded that the tests prescribed by the standard are reasonable, practicable, and appropriate for the affected motor vehicles. The petitions for reconsideration of sections S5.1 and S5.2 are therefore denied.

5. Two petitioners, Rolls Royce and General Motors, stated that it was not practicable to use the "seat back" in determining the angle of the torso line in S4.3.2, in that the seat back angle may vary according to which of its surfaces is measured. Although there may be instances where the angle of the seat back is difficult to determine, questions arising from such instances can be resolved, if necessary, by administrative interpretation, and it has been decided to retain the reference to "seat back" in section S4.3.2.

6. Several petitioners stated that the substitution of the word "device" for "provision" in the definition of seat belt anchorage appeared to change the meaning of that term. No substan-

tive change was intended, and since the rewording has caused some misunderstanding, the Director has decided to return to the original wording.

7. General Motors also petitioned to reinstate the provision in section S4.3.2 that would allow the upper torso restraint angle to be measured from the shoulder to the anchorage "or to a structure between the shoulder point and the anchorage". The phrase rendered uncertain the effective angle of the belt under stress. The quoted language was deleted in the notice of September 20, 1969, and no sufficient reason has been given for reinstating it. The request is therefore denied.

8. Toyota Motor Co. requested that sections S5.1 and S5.2 be amended to allow use of body blocks equivalent to those specified. Although the standard provides that an anchorage must meet the strength requirements when tested with the specified blocks, manufacturers may use whatever methods they wish to ascertain that their products meet these requirements when so tested, as long as their methods constitute due care. If the Toyota procedures are, in fact, equivalent, there is no need to amend the standard to accommodate them. The request is therefore denied.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 210, in § 571.21 of Title 49, Code of Federal Regulations is amended. . . .

*Effective date.* For the reasons given above, it has been determined that the effective date of the amended standard shall be January 1, 1972, for passenger cars. The effective date for multi-purpose passenger vehicles, trucks, and buses shall be July 1, 1971, except that the effective date for installation of anchorages for upper torso restraints for seating positions other than front outboard designated seating positions shall be January 1, 1972.

Issued on November 20, 1970.

Charles H. Hartman,  
Acting Director.

35 F.R. 18116  
Nov. 26, 1970



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 210

### Seat Belt Assembly Anchorages and Seat Belt Installations; Reconsideration and Amendment (Docket No. 2-14; Notice No. 4)

The purpose of this notice is to amend Motor Vehicle Safety Standards No. 208 and 210, with respect to the installation of shoulder belts in multipurpose passenger vehicles exceeding 10,000 pounds GVWR and the provision of anchorages for shoulder belts in vehicles other than passenger cars.

The seat belt installation standard was amended on September 30, 1970, to require installation of seat belts in multipurpose passenger vehicles, trucks, and buses manufactured after July 1, 1971 (35 F.R. 15222). Exemptions from the requirement for shoulder belt installation were provided for certain types and weights of vehicles.

During the course of the subsequent rulemaking activity which led to the issuance of the occupant crash protection standard, it was determined that the larger weight classes of trucks and multipurpose passenger vehicles should not be required to install shoulder belts (35 F.R. 14941, 35 F.R. 16937, 36 F.R. 4600). The standard therefore required lap belts, but not shoulder belts, for vehicles over 10,000 pounds GVWR, effective January 1, 1972. The September 30 amendment, which is to become effective six months earlier than the occupant crash protection rule, had provided a similar exemption for large trucks but not for multipurpose passenger vehicles, with the result that shoulder belts would have been required for many large multipurpose passenger vehicles during the period July 1, 1971-January 1, 1972, but not afterward. To correct this inconsistency, the seat belt installation standard is amended, effective July 1, 1971, to exempt multipurpose passenger vehicles of more than

10,000 pounds GVWR from the shoulder belt requirement.

In accordance with the foregoing, section S3.1 of Standard No. 208, as published September 30, 1970 (35 F.R. 15222) is amended effective July 1, 1971 . . . .

Standard No. 210, *Seat Belt Assembly Anchorages*, presently requires vehicles other than passenger cars to have shoulder belt anchorages installed at front outboard seating positions by July 1, 1971, and at rear outboard seating positions by January 1, 1972 (35 F.R. 15293, 35 F.R. 18116, 36 F.R. 4291). The Recreational Vehicle Institute has petitioned for an amendment of the standard, to delete the requirement for shoulder belt anchorages at positions where shoulder belt installation is not required by Standard No. 208.

It has been found that this petition has merit. The probability of shoulder belt installation by the owners of these vehicles is very small, and the difficulty of anchorage installation, particularly in multipurpose passenger vehicles, is often greater than in passenger cars. The amendment is therefore considered to be in the public interest.

The request by RVI for a postponement of the July 1, 1971, effective date for installation of shoulder belt anchorages has not been found justified, and the petition is in that respect denied.

In accordance with the foregoing, section S4.1.1 of the present Motor Vehicle Safety Standard No. 210 (effective July 1, 1971), and the amended Standard No. 210 as published November 26, 1970 (35 F.R. 18116, effective January 1, 1972), in 49 CFR 571.21, are both amended . . . .

Effective: July 1, 1971  
January 1, 1972

The effective dates of the amendments made by this notice are as indicated above. Because the amendments relieve restrictions and impose no additional burden on any person, notice and request for comments on such notice are found to

be unnecessary, and it is found, for good cause shown, that an effective date earlier than 180 days after issuance is in the public interest.

**36 F.R. 9869**  
**May 29, 1971**

## MOTOR VEHICLE SAFETY STANDARD NO. 210

### Seat Belt Assembly Anchorages—Passenger Cars, Multipurpose · Passenger Vehicles, Trucks, and Buses (Docket No. 2-14; Notice No. 4)

**S1. Purpose and scope.** This standard establishes requirements for seat belt assembly anchorages to insure their proper location for effective occupant restraint and to reduce the likelihood of their failure.

**S2. Application.** This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses.

**S3. Definition.** "Seat belt anchorage" means the provision for transferring seat belt assembly loads to the vehicle structure.

#### **S4. Requirements.**

##### **S4.1 Type.**

**[S4.1.1** Seat belt anchorages for a Type 2 seat belt assembly shall be installed for each forward-facing outboard designated seating position in passenger cars, other than convertibles and for each designated seating position for which a Type 2 seat belt assembly is required by Standard No. 208 in vehicles other than passenger car. (36 F.R. 9869—May 29, 1971. Effective: 1/1/72)]

**S4.1.2** Seat belt anchorages for a Type 1 or a Type 2 seat belt assembly shall be installed for each designated seating position, except a passenger seat in a bus or a designated seating position for which seat belt anchorages for a Type 2 seat belt assembly are required by S4.1.1.

##### **S4.2 Strength.**

**S4.2.1** Except for side-facing seats, the anchorage for a Type 1 seat belt assembly or the pelvic portion of a Type 2 seat belt assembly shall withstand a 5,000-pound force when tested in accordance with S5.1.

**S4.2.2** The anchorage for a Type 2 seat belt assembly shall withstand 3,000-pound forces when tested in accordance with S5.2.

**S4.2.3** Permanent deformation or rupture of a seat belt anchorage or its surrounding area is not considered to be a failure, if the required force is sustained for the specified time.

**S4.2.4** Except for common seat belt anchorages for forward-facing and rearward-facing seats, floor-mounted seat belt anchorages for adjacent designated seating positions shall be tested by simultaneously loading the seat belt assemblies attached to those anchorages.

**S4.3 Location.** As used in this section, "forward" means in the direction in which the seat faces, and other directional references are to be interpreted accordingly.

#### **S4.3.1 Seat belt anchorages for Type 1 seat belt assemblies and the pelvic portion of Type 2 seat belt assemblies.**

**S4.3.1.1** In an installation in which the seat belt does not bear upon the seat frame, a line from the seating reference point to the nearest contact point of the belt with the hardware attaching it to the anchorage for a nonadjustable seat, or from a point 2.50 inches forward of and 0.375 inch above the seating reference point to the nearest contact point of the belt with the hardware attaching it to the anchorage for an adjustable seat in its rearmost position, shall extend forward from the anchorage at an angle with the horizontal of not less than 20° and not more than 75°.

**S4.3.1.2** In an installation in which the belt bears upon the seat frame, the seat belt anchorage, if not on the seat structure, shall be aft of the rearmost belt contact point on the seat frame with the seat in the rearmost position. The line from the seating reference point to the nearest belt contact point on the seat frame shall extend

forward from that contact point at an angle with the horizontal of not less than 20° and not more than 75°.

**54.3.1.3** In an installation in which the seat belt anchorage is on the seat structure, the line from the seating reference point to the nearest contact point of the belt with the hardware attaching it to the anchorage shall extend forward from that contact point at an angle with the horizontal of not less than 20° and not more than 75°.

**54.3.1.4** Anchorages for an individual seat belt assembly shall be located at least 6.50 inches apart laterally, measured between the vertical centerlines of the bolt holes.

**54.3.2 Seat belt anchorages for the upper torso portion of Type 2 seat belt assemblies.** With the seat in its full rearward and downward position and the seat back in its most upright position, the seat belt anchorage for the upper end of the upper torso restraint shall be located within the acceptable range shown in Figure 1, with refer-

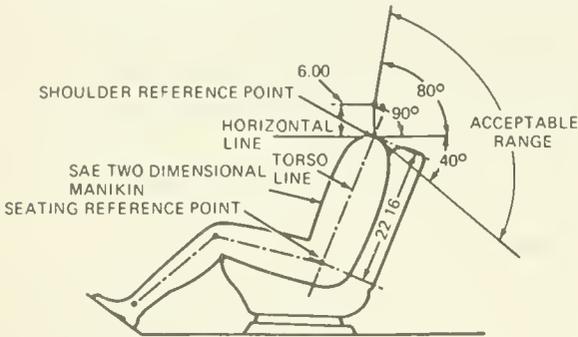


FIGURE 1 LOCATION OF ANCHORAGE FOR UPPER TORSO RESTRAINT

ence to a two dimensional manikin described in SAE Standard J826 (November 1962) whose "H" point is at the seating reference point and whose torso line is at the same angle from the vertical as the seat back.

**55. Test procedures.** Each vehicle shall meet the requirements of S4.2 when tested according to the following procedures. Where a range of values is specified, the vehicle shall be able to meet the requirements at all points within the range.

**55.1 Seats with Type 1 or Type 2 seat belt anchorages.** With the seat in its rearmost position, apply a force of 5,000 pounds in the direction in which the seat faces to a pelvic body block as described in Figure 2, restrained by a

Type 1 or the pelvic portion of a Type 2 seat belt assembly, as applicable, in a plane parallel to the longitudinal centerline of the vehicle, with an initial force application angle of not less than 5° nor more than 15° above the horizontal. Apply the force at the onset rate of not more than 50,000 pounds per second. Attain the 5,000-pound force in not more than 30 seconds and maintain it for 10 seconds.

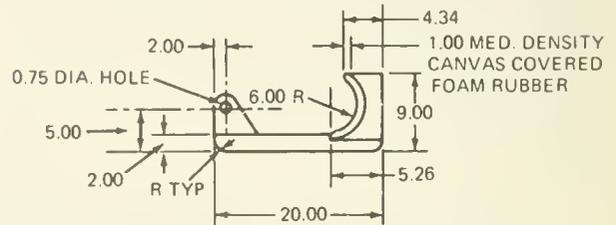
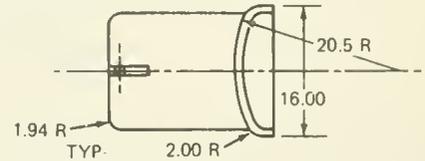


FIGURE 2 - BODY BLOCK FOR LAP BELT ANCHORAGE

**55.2 Seats with Type 2 seat belt anchorages.** With the seat in its rearmost position, apply forces of 3,000 pounds in the direction in which the seat faces simultaneously to pelvic and upper torso body blocks as described in Figures 2 and 3, restrained by a Type 2 seat belt assembly, in

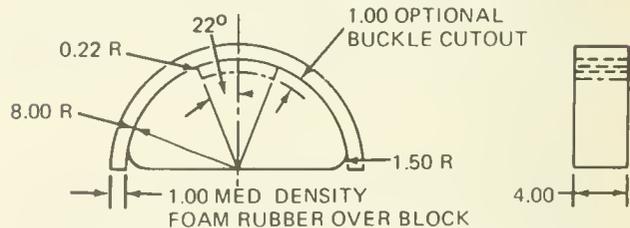


FIGURE 3 - BODY BLOCK FOR COMBINATION SHOULDER AND LAP BELT ANCHORAGE

a plane parallel to the longitudinal centerline of the vehicle, with an initial force application angle of not less than 5° nor more than 15° above the horizontal. Apply the forces at the onset rate of not more than 30,000 pounds per second. Attain the 3,000-pound forces in not more than 30 seconds and maintain them for 10 seconds.

**35 F.R. 18116  
November 26, 1970**

**MOTOR VEHICLE SAFETY STANDARD NO. 211****Wheel Nuts, Wheel Discs, and Hub Caps—Passenger Cars and Multipurpose Passenger Vehicles**

**S1. Purpose and scope.** This standard precludes the use of wheel nuts, wheel discs, and hub caps that constitute a hazard to pedestrians and cyclists.

**S2. Application.** This standard applies to passenger cars, multipurpose passenger vehicles, and passenger cars and multipurpose passenger vehicle equipment.

**S3. Requirements.** Wheel nuts, hub caps, and wheel discs for use on passenger cars and multipurpose passenger vehicles shall not incorporate winged projections.

**[INTERPRETATION**

A clarification of the term "wheel nut" as used in the requirements section S3 of Standard No. 211 has been requested. This section states that

"wheel nuts, hub caps, and wheel discs for use on passenger cars and multipurpose passenger vehicles shall not incorporate winged projections." A "wheel nut" is an exposed nut that is mounted at the center or hub of a wheel, and not the ordinary small hexagonal nut, one of several which secures a wheel to an axle, and which is normally covered by a hub cap or wheel disc.

Issued on July 22, 1969. (34 F.R. 12283—July 25, 1969)

F. C. Turner  
Federal Highway Administrator]

**32 F.R. 2416**  
**February 3, 1967**



## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 212

### Windshield Mounting—Passenger Cars

A proposal to amend Part 371 of the Federal Motor Vehicle Safety Standards by adding a Standard No. 212, Windshield Mounting—Passenger Cars, was published as an advance notice of proposed rule making on October 14, 1967 (32 F.R. 14281) and a notice of proposed rule making on December 28, 1967 (32 F.R. 20866).

Interested persons have been given the opportunity to participate in the making of this amendment, and careful consideration has been given to all relevant matter presented.

This new standard requires that, when tested as prescribed, each passenger car windshield mounting must retain either: (1) not less than 75% of the windshield periphery; or (2) not less than 50% of that portion of the windshield periphery on each side of the vehicle longitudinal centerline, if an unrestrained 95th percentile adult male manikin is seated in each outboard front seating position.

Several comments objected to the proposed standard and in some cases urged that more research should be done before any type of windshield mounting is required. The standard, is however, part of an integrated program aimed at accomplishing the widely accepted safety goal of keeping occupants within the confines of the passenger compartment during a crash. One major step in this program is the utilization of the laminated glazing material prescribed in Federal motor vehicle safety standard No. 205, which has resulted in a marked reduction in serious head injury to occupants known to have struck the windshield. The windshield mounting retention requirement prescribed in this standard takes advantage of this improved glazing material and will further minimize the likelihood

of occupants being thrown from the vehicle during a crash.

Several comments requested reduction of the 75% retention requirement to 50%. The Administrator concludes that, as an alternative, 50% retention is acceptable if: (1) an unrestrained 95% percentile adult male manikin is seated in each outboard front seating position when the test procedure is performed, and (2) at least 50% of that portion of the windshield periphery on each side of the vehicle longitudinal centerline is retained.

Several comments requested that the phrase "or approved equivalent" be added to the "Demonstration procedures" provision. § 371.11 of the Federal motor vehicle safety standards provides that "an approved equivalent may be substituted for any required destructive demonstration procedure." Consequently, inclusion of the phrase requested is not necessary.

In consideration of the foregoing, § 371.21, of Part 371 of the Federal motor vehicle safety standards is amended by adding Standard No. 212, "Windshield Mounting—Passenger Cars," as set forth below, effective January 1, 1970.

This rule-making action is taken under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (P.L. 89-563, 15 U.S.C. §§ 1392 and 1407) and the delegation of authority contained in Part 1 of the Regulations of the Office of the Secretary of Transportation (49 CFR Part 1).

Issued in Washington, D.C. on August 13, 1968.

John R. Jamieson, Deputy  
Federal Highway Administrator

**33 F.R. 11652**  
**August 16, 1968**



## MOTOR VEHICLE SAFETY STANDARD NO. 212

### Windshield Mounting—Passenger Cars

**S1. Purpose and scope.** This standard establishes windshield retention requirements for windshield mountings.

**S2. Application.** This standard applies to passenger cars.

**S3. Requirements.** When tested in accordance with S4, each windshield mounting must retain either—

(a) Not less than 75% of the windshield periphery; or

(b) Not less than 50% of that portion of the windshield periphery on each side of the vehicle longitudinal centerline, if an unrestrained 95th percentile adult male manikin is seated in each outboard front seating position.

**S4. Demonstration procedures.** [Impact the vehicle perpendicularly into a fixed collision barrier at a forward longitudinal velocity of 30 miles per hour. (35 F.R. 11242—July 14, 1970. Effective: 9/1/70)]

**33 F.R. 11652**  
**August 16, 1968**



## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 213

### Child Seating Systems

Many young children are killed and injured needlessly in motor vehicle accidents each year. By a conservative estimate, the use of child seating systems designed and built with safety in mind can produce a substantial reduction in fatalities and injuries.

One difficulty with achieving this goal is that child seating systems on the market today run the gamut from those that offer excellent crash protection to devices which do little to protect a child in the event of accident and, indeed, may actually increase the severity of his injuries. In this latter category are systems which, though advertised and promoted as safety seats, are little more than child positioning devices. The parent who buys and installs one of these devices may be lulled into believing he has thereby assured the safety of his child. However, some of these systems are in fact hazardous to the child who occupies them. Many have sharp edges, hard unyielding surfaces, and low resistance to collapse.

Consequently, the Director has concluded that the interests of motor vehicle safety would be served by requiring all child seating systems to meet minimum performance standards. He anticipates that improvements in the safety performance of child seating systems will reduce deaths and injuries in two principal ways: First, children occupying the systems will be better protected against injury and death; second, more small children will be carried in the improved systems instead of being allowed to go unrestrained in moving motor vehicles.

It should be emphasized that the performance criteria established in this standard are minimum ones. Many seating systems now available exceed the requirements of the standard, and there are some which have safety features that the standard—because of its universal application—does not require. Additional research activities are underway to evaluate child restraint systems for

the purpose of identifying further performance criteria suitable for inclusion in the standard.

A notice of proposed rule making relating to child seating systems was issued on January 17, 1969 (34 F.R. 1172). At the request of a number of interested persons, the time to file comments on the contents of the proposed rule was twice extended (34 F.R. 2564; 34 F.R. 7032). In general, the responses to the notice were both constructive and helpful. A trade association composed of manufacturers of child seating systems and other products employed a consulting firm to evaluate the proposed standard and to conduct a survey of users of child seating systems. Its reports were extremely valuable in formulating the final rule. In general, persons who filed comments agreed on the need for a motor vehicle safety standard covering child seating systems. There was also general agreement on the features of the various systems that should be regulated and required. Naturally, differing views were expressed on the details of the proposed standard as well as the performance levels to be specified.

These comments, and other available data, have been carefully considered. They have convinced the Director that it is practicable to produce and market child seating systems of various designs that will provide much-needed crash protection to their young occupants and, at the same time, be within the means of parents and others who are concerned about the safety of infant passengers.

The standard defines a child seating system as an item of motor vehicle equipment for seating and restraining a child being transported in a passenger car, multipurpose passenger vehicle, truck, or bus. Devices for seating a child, which utilize the vehicle restraint system or a restraint system incorporated as part of the device, or both, are covered. Excluded from the coverage of the standard are devices solely for use on motorcycles and Type 3 seat belt assemblies which, while they

provide restraint, do not provide seating for the child. (Performance standards for Type 3 seat belt assemblies are included in Motor Vehicle Safety Standard No. 209.) Also excluded are devices, such as "car beds," for use by recumbent and semirecumbent children. It is anticipated that these devices will be the subject of rule making after completion of research into criteria for maximizing their safety.

Under the standard, manufacturers will be required to provide purchasers of seating systems with information relating to their proper installation and use. The safe performance of a child seating system depends, in large measure, on its proper installation and use. However, the jurisdiction of the Department does not extend to the persons who install the systems and position children in them. Therefore, it is essential for system manufacturers to provide consumers with clear guidance on these points. In a major change from the labeling requirement in the notice of proposed rule making, the Director has decided to permit each manufacturer to specify recommended height and weight limits for children who can safely occupy his systems, without requiring all systems to be recommended for children having any specific height or weight. The purpose of the change is to permit maximum design flexibility, in view of the fact that some systems cannot afford the same level of safety for a wide size range of children. In addition, the Director has changed the location of the mandatory installation instructions, permitting them to appear on a separate sheet of paper rather than requiring them to be on the label which must be attached to each system. The object of the change was to reduce the quantity of information on the label and thereby to insure that more users will read it.

The method used to attach a restraint device to the motor vehicle is obviously critical to its safe performance. Because seat belts are engineered, manufactured, and installed for the specific purpose of restraining vehicle occupants, and their value for that purpose has been established, the Director has retained the requirement that each child seating system must be designed and constructed so that it will be restrained by a seat belt assembly when the system is properly installed. In addition, the proposed rule sought

to eliminate the bail-type of attachment device, which uses hooks fitting over the top of the vehicle seat back, on the ground that that design is not crashworthy and also poses a hazard to rear seat occupants. In the standard, the prohibition of rigid components for attaching the system to a seat back is retained. Other devices, such as straps, for attaching the system to a seat back are also prohibited. Use of these attachment methods can subject seat backs to greater loads than they can withstand in crash situations. However, the requirement has been revised to permit attachment by means of components that fit between the vehicle seat back and the seat cushion. This means of attaching the child seat to the vehicle seat does not subject the vehicle seat back to excessive loading and can improve the stability of the child seating system in the event of a crash.

Because it is not fully developed, the body of a young child cannot safely tolerate the concentrated loads that an adult's body can. Therefore, it is not medically sound to restrain a child so that restraint loads are concentrated solely on his pelvis or his thorax. The widest possible distribution of those loads is desirable. As one respondent pointed out, the available information does not disclose in what proportion the loads should be distributed. Nevertheless, the Director had decided to retain the requirement that child seating systems must distribute restraint forces on both the pelvis and thorax of their occupants. In the circumstances, a requirement for distribution of restraint forces, even if the extent of distribution is unspecified, seems preferable to no requirements at all.

Paragraph S4.5, which deals with distribution of restraint forces, has been changed to make it clear that when a child seating system's installation instructions call for using a vehicle seat belt assembly to restrain a child, the requisite distribution of restraint forces may be provided by that seat belt assembly as well as by components of the child seating system.

In order to protect children against "whiplash" injury during rear-end crashes, paragraph S4.6 of the standard requires each child seating system either to have a seat back that is at least 21 inches higher than its seating surface or to be recommended for use only in locations where the ve-

hicle seat back or head restraint furnishes comparable protection. The 21-inch height requirement is 5 inches less than the minimum specified in the proposed rule. The change is based on a survey of users—noted above—which showed that 90 percent of the children for whom seating systems are purchased no longer use them after they are 36 months old. A seat back or other support which is 21 inches high provides adequate head restraint protection for a 97th percentile 3-year-old male child.

Paragraph S4.7, which specifies minimum width and strength requirements for webbing, and paragraph S4.8, pertaining to hardware, have both been changed in the light of comments in response to the Notice. The minimum width of webbing was reduced from  $1\frac{3}{4}$  inches to  $1\frac{1}{2}$  inches, and the requirement was limited to the webbing that directly contacts the child's body. However, requirements for resistance to crocking and staining were retained despite opposition to them, since there is a likelihood that belts that stain children's clothing will go unused. The requirements relating to the corrosion-resistance qualities of hardware were altered so that they now apply only to hardware that sustains restraint forces. This change eliminates an unnecessary burden on manufacturers of seating systems that have decorative metal parts.

Persons who have considered the subject have generally agreed that sharp edges, small round bars, and hard unyielding surfaces should not be part of child seating systems, since any of these deficiencies could injure a child in a crash. However, some persons who filed comments recommended deletion of any prohibition against these features on the ground that there is insufficient information on which to specify precise performance criteria relating to impact protection. While the wealth of detail needed to design a system that offers optimum impact protection may be unavailable, the Director has concluded that sufficient information is in hand to permit establishment of minimum performance characteristics that are well within the present state-of-the-art. Hence, he has retained impact protection requirements but changed them somewhat in the light of the comments and of other information that has become available after the notice of proposed rule making was issued.

Impact protection requirements have been changed in the following respects: 1. The standard does not include a minimum permissible width for rigid components; the limitation of corners and edges of rigid components to a radius of three-quarters inch is considered adequate to eliminate sharp edges and corners. 2. A more definitive description of energy-absorbing material has been added to give manufacturers a better basis for material selection and to preclude the use of soft sponge rubber, which offers little impact protection. 3. The requirement that components be composed of, or covered with, energy-absorbing material has been modified to exclude buckles and rigid sides of child seats which have a surface area of at least 24 square inches. Large flat surfaces tend to distribute impact loads over a sufficient area of a child's torso to preclude serious injury.

The performance-under-load requirements in the proposed rule remain virtually unchanged, except for reductions in the static loads child seating systems must be capable of sustaining. These reductions reflect changed assumptions about the maximum ages of children who occupy child seating systems. The 2,000-pound static load specified in the proposed rule was based on the hypothesis that a 50-pound child would be subjected to 40 "g" in a crash. The 1,600-pound load requirement of the standard results from applying the same "g" forces to a hypothetical 40-pound child. Several comments recommended that a dynamic test procedure be specified, on the ground that it would more closely simulate actual crash conditions. Because dynamic test facilities are not readily available and, in any event, no generally accepted dynamic impact performance levels exist, the Director has decided not to follow this recommendation.

In consideration of the foregoing, Part 571 of Title 49, CFR, is amended by adding a new Federal motor vehicle safety standard. . . . This new standard is effective on January 1, 1971.

Issued on March 23, 1970.

Douglas W. Toms,  
Director  
National Highway Safety Bureau

35 F.R. 5120  
March 26, 1970



**PREAMBLE TO RECONSIDERATION AND AMENDMENT TO MOTOR VEHICLE SAFETY  
STANDARD NO. 213  
Child Seating Systems  
(Docket No. 2-15)**

Motor Vehicle Safety Standard No. 213, establishing requirements for child seating systems for use in passenger cars, multipurpose passenger vehicles, trucks, and buses, was issued on March 23, 1970 (35 F.R. 5120). Thereafter, pursuant to § 553.35 of the procedural rules (49 CFR 553.35, 35 F.R. 5119), petitions for reconsideration of the standard were filed by Chrysler Corp., General Motors Corp., American Motors, Bolt Beranek and Newman, Inc. (on behalf of Juvenile Products Manufacturers' Association), Hamill Manufacturing Co., Kiddie Kar-Go, Inc., and the Bobby-Mac Co., Inc. In addition, comments on the petitions were submitted by the Center for Auto Safety

In response to information contained in several of the petitions, plus other available data, the Director of the National Highway Safety Bureau is changing certain requirements of the standard. In addition, the petitions raised certain issues which are considered to be appropriate for future rulemaking action because they indicate areas in which the standard may be improved. Therefore, the Director is today issuing a notice of proposed rule making, inviting public comment on those matters. The Director has declined to grant requested relief from other requirements of the standard.

1. Paragraph S3 of the standard defines a child seating system as "an item of motor vehicle equipment for seating and restraining a child being transported in a passenger car, multipurpose passenger vehicle, truck, or bus." For purposes of clarity, this definition is being revised to state "\* \* \* for seating and restraining a child in a 'motor vehicle'". This revision does not change the standard's requirements, as the

particular vehicles to which the standard applies, enumerated in paragraph S2, remain the same.

At present the standard does not apply to devices that seat children in motor vehicles, but do not restrain them. General Motors has requested a change in the definition of "child seating system" that would expand the coverage of the standard to include all devices for seating children, thus eliminating the exception that currently exists for those devices which merely seat, but do not restrain. The change requested by General Motors is believed to have merit, and in the notice of proposed rulemaking issued concurrently with this amendment, the Director has proposed to expand the coverage of the standard to include all devices that are manufactured to seat children in motor vehicles. The Director agrees with General Motors that the interests of safety would be better served by precluding the manufacture of devices which, although designed to seat children in motor vehicles, do not provide necessary protection. The Director also wishes to make clear the scope of the present regulation. As presently defined, a child seating system includes devices for seating and restraining a child. The intent of the standard is to include any seating device that may lead a consumer to assume that it will offer some protection to a child placed in it, either by restraining the child with the vehicle restraint system, a restraint system incorporated into the device, or both. Therefore, any seating device that provides restraint for a child, no matter how minimal or for what purpose, is a child seating system under the standard.

2. Paragraph S4.1(f) of the standard, as originally issued, required manufacturers of child seating systems to warn against use of the systems on vehicle seats that have hinged or

folding seat backs but lack seat back latches to restrain the backs in the event of a crash. General Motors Corporation has pointed out that the mandatory statement did not warn against use of child seats on vehicles seats that hinge in their entirety and do not have restraining latches. The warning specified in paragraph S4.1(f) is revised to include a requirement for a warning against use of child seats on hinged vehicle seats that do not have seat latches. Paragraph S4.1.1, which contains an exception to the warning requirement, is changed to reflect the change in the required warning.

3. Both General Motors and Chrysler Corp. have asked for relief from the requirement, in paragraph S4.1(a), that the manufacturer's name be included on the label affixed to each child seating system. They argue that it is common marketing practice for vehicle manufacturers to purchase part and equipment items for resale under their own names and that, in view of the distributor's obligation to certify that those items conform to applicable Federal motor vehicle safety standards, no valid compliance purpose is served by requiring the manufacturer's name to appear on each child seating system. The objective of the requirement is two-fold: First, to facilitate remedial action by the Bureau in the event noncompliance is discovered; and, second, to enable consumers to identify the products which are found to fall below the performance levels established by the standard or to contain safety-related defects. The Director has concluded that both of these objectives can be attained if the label contains the name of a person who accepts complete responsibility for the safe performance of the system. Therefore, paragraph S4.1(a) is revised to permit a distributor to place his name on the label, in place of the manufacturer's name, only if the distributor accepts responsibility for all duties and liabilities imposed on the manufacturer by the National Traffic and Motor Vehicle Safety Act (15 U.S.C. § 1381-1426). It should be noted that the actual manufacturer retains the duties and liabilities imposed on him by the Act.

4. General Motors, American Motors, and Hamill Manufacturing Co. have asked for relief from paragraph S4.1(e)'s requirement that the manufacturer of a child seating system design

nate the makes and models of vehicles in which it can safely be used and the locations in those vehicles at which it is suitable for use. It was the intent of this provision to permit the designation to be stated in general terms. It would obviously be impracticable to require the label of a child seating system to contain a listing of many hundreds of vehicle makes and models. The petitions indicate that clarification of this provision is in order, and the paragraph has been revised to make it clear that a general description of the vehicles and locations is all that is required.

5. Paragraph S4.1(h) of the standard requires child seating system manufacturers to state on the required label that the child seat is for use "only by children capable of sitting upright by themselves", and to follow this statement with the recommended minimum and maximum height and weight of children who can safely occupy the seating system. General Motors has asked that manufacturers, where appropriate, be authorized to designate their products as safe for children "capable of sitting upright by themselves", rather than requiring them to specify the recommended minimum height and weight. The Bobby-Mac Co., however, has suggested that manufacturers whose child seats are designed for use by all ages of children, including those who cannot sit upright, should not be prohibited from recommending their seats for use with these children. The Director believes that the phrase "capable of sitting upright by themselves", used alone, lacks necessary specificity, and therefore denies General Motors' request. However, it has been determined that minimum child size can be adequately expressed by specifying only the child's weight, and the minimum height requirement has therefore been deleted.

With reference to the request of the Bobby-Mac Co., it has been concluded that child seating systems can be designed to accommodate children who are unable to sit upright by themselves and that in fact the original proposal permitted such a design. The phrase "capable of sitting upright by themselves" is therefore deleted as part of the labeling requirement. However, it may be necessary for a seating system designed to accommodate children not capable of sitting upright unaided to be designed so that the attitude of the child is adjustable to pro-

vide his back with support. If so, paragraph S4.2 requires the manufacturer to furnish instructions on how the adjustment is to be made. Further, both the impact protection requirements of paragraph S4.10 and the performance requirements of paragraph S4.11 must be met under these instructions. Therefore, in those cases where a seating system can adjust the child's position, it must meet the impact protection and performance requirements at each recommended adjustment position. Language clarifying this requirement is being added to paragraph S4.11.

6. Kiddie Kar-Go, Inc., has asked for modification of paragraph S4.4(a) of the standard, which precludes child seating systems from having bails, or similar devices, that hook over the backs of vehicle seats. It argues that its child seat, which is positioned and held in place partly through the use of bails or similar devices, has the advantage of appearing to be something other than a system to provide crash protection. Consequently, it is argued, the seat does not present certain specified psychological barriers to its installation and use to the same extent that a "crash protection" seat does. There is, however, no evidence in the Director's possession, and none has been presented by the petitioner, to indicate that the psychological factors which the petitioner mentions enter into the decision to purchase, install, and use a child seat. On the other hand, it is known that a seat back to which a child seat is attached either with straps or bails that hook over the back can thereby be subjected to greater forces than it can withstand in a crash situation. In a forward collision, the additional load on the seat back resulting from attachment of a child seat would, in many instances, cause the seat back to fail. The resultant forces on an infant occupant of the child seat could produce serious personal injury. Therefore, the request for amendment of paragraph S4.4(a) is denied.

7. In response to petitions from Hamill Manufacturing Co. and American Motors, paragraph S4.6 of the standard, dealing with head restraint capability, has been amended to vary the mandatory minimum height of the head restraint (either the back of the child seating system itself or the back of the vehicle seat, including its head restraint, in which the system is installed) with

the maximum weight of the child for which the child seating system is designed. Also, these heights are to be measured along a line parallel to the rear surface of the vehicle seat back. The minimum height of a head restraint for the largest child weight category has been set at 20 inches, a height determined sufficient to provide adequate protection.

8. General Motors has requested that the entire head restraint paragraph be deleted on the basis that paragraph S4.6 of the standard constitutes an inappropriate and an unduly restrictive design requirement. General Motors also says that the requirement fails to contribute to motor vehicle safety in light of the lack of any performance requirements for the head restraint. The request is denied. Safety research has made it clear that head restraints can significantly reduce the frequency and severity of neck injuries in rear-end collisions. While these studies dealt primarily with protection of adult occupants, it would seem even more important to afford small children the type of protection that adults derive from the head restraints required by Motor Vehicle Safety Standard No. 202. A child's head is proportionately larger than an adult's, and the neck of a child is also weaker than an adult neck. The neck vertebrae of children are immature models of adult vertebrae. When the relatively heavy head of a child is suddenly rotated rearward, his vertebrae are unable to sustain the resultant forces. The result is likely to be serious injury to the arteries supplying blood to the head, to nerves, to the vertebrae themselves, or to the spinal cord. It is true that the standard does not set out detailed performance standards for the head restraint protection which child seats must provide. Instead, it requires manufacturers to make a good faith effort to provide restraint against the forces that act on a child's head during rearward impact of the vehicle. The absence of specified performance goals is caused by a lack of information on which to base a specific criterion. In the circumstances, it is preferable to retain the existing requirements until the standard can be improved by the addition of more specific restrictive, and elaborate performance requirements for child seat head restraints. To accomplish this purpose, the Director has included in the notice of proposed

rule making issued today proposals concerning improved performance requirements for head restraints of child seating systems.

9. The wording of paragraph S4.8 has been changed to state more precisely the requirement that metal components of child seating systems that directly restrain the child must meet the corrosion resistance requirements of similar components of seat belt assemblies as specified in Motor Vehicle Safety Standard No. 209.

10. General Motors and Bolt Beranek and Newman both requested reconsideration of the impact protection requirements in paragraph S4.10 of the standard. General Motors stated that the requirement for material covering rigid components that a child may contact upon impact specifies only that the material be deformable and either nonrecovery or slow-recovery energy-absorbing material. General Motors requested deletion of this requirement pending development of more objective, performance-related criteria. General Motors also objects to the requirement on the ground that the absence of a specified demonstration procedure makes it difficult for manufacturers to ascertain with certainty whether their child seating systems comply. It is recognized that the impact protection requirements are minimal ones. As indicated in the preamble to the rule (35 F.R. 5121), there does not presently exist enough information upon which to base precise performance criteria relating to impact protection. It does not follow, however, that the standard should not include impact protection requirements. A young child, whose head and body are not fully developed, has a low resistance to impact trauma. His skull and thoracic cage are both highly elastic and cannot withstand highly concentrated forces. It is clear that children have a vital need for protection against impacts with the type of sharp edges or small round bars that are found in many child seating systems on the market today. The Director has determined that child seat manufacturers should be able to make a reasonable, good-faith determination of the areas on their systems that may be contacted by a child's torso or head by using a doll, anthropomorphic dummy or other similar device to simulate dimensions and sizes of the children for which their systems are recommended. In the circumstances, the Direc-

tor has concluded that it would be unreasonable to deny children the impact protection that compliance with the standard's minimal requirements will afford. It is agreed, however, that more precise requirements would further enhance motor vehicle safety. Consequently, the notice of proposed rule making issued today proposes revisions of the impact protection requirements that would add more exact performance requirements and test procedures to paragraph S4.10.

Paragraph S4.10.1 provides that the rigid components of a child seating system that may be contacted by the head or torso under various impacts must have a minimum radius of three-quarters of an inch. Bolt Beranek and Newman stated in their petition that this requirement could be interpreted to apply before the component is covered with energy absorbing material, and that if this were the case, the requirement would pose an undue burden on the manufacturer. They requested, therefore, that the minimum radius of those components be specified after they are covered with energy-absorbing material. Such a requirement, however, would not preclude use of a rigid member having a sharp edge as long as the outer material complied with specifications for minimum radius and energy-absorbing qualities. In view of the possibility that this combination of materials could result in serious injury to a child who impacts them, it was decided that the minimum radius of curvature should continue to apply to the underlying component, but that the minimum radius could be reduced from three-quarters of an inch to one-quarter of an inch.

11. The performance requirements and demonstration procedures in paragraphs S4.11 and S5 of the standard prescribe a test in which a torso block is subjected to a static load while placed in a child seating system installed on a vehicle seat in accordance with the recommendations of the child seat manufacturer. Under the original requirements, the reference point in the torso block must not move forward more than 10 inches when the block is subjected to a forward load of 1,600 pounds and must sustain a rearward load of 800 pounds. In response to petitions for reconsideration from General Motors, American Motors, and Bolt Beranek and New-

man, the performance criteria have been modified as follows:

(a) The single force requirement for all seats has been retained; however, the 1,600-pound forward force has been reduced to 1,000 pounds, and the 800-pound rearward force has been reduced to 500 pounds. These reductions make the requirements more nearly consistent with the forces created in a 30-m.p.h. barrier collision.

General Motors had stated its belief that a single load performance requirement for all seats, regardless of the maximum child size recommended for use in the seat, was inappropriate. It had further requested that the force of 1,600 pounds, reflecting a 40g force applied to a 40-pound child, be changed to a 20g force that more nearly represented the forces generated in a 30-m.p.h. barrier collision test.

(b) The allowable forward horizontal movement of the reference point has been increased from 10 to 12 inches. This change takes into account recent testing, showing that deflection of the vehicle seat permits a substantial amount of forward movement. There is nothing the child seating manufacturer can do by way of improved design or construction to avoid some forward movement resulting from vehicle seat deflection. Consequently, the standard is amended to allow for unavoidable deflection of the vehicle seat by increasing the maximum permissible movement of the reference point to 12 inches.

(c) In response to a request by General Motors and Bolt Beranek and Newman, the standard is amended by inserting dimensional measurements for locating the test device reference point. This change should avoid potential confusion and facilitate testing of child seating systems.

12. General Motors has also asked that the requirement that the maximum static-test load be sustained for a period of 10 seconds be eliminated. It states that the 10-second period is unrealistic and unrelated to the split-second duration of loading in actual impact situations. It therefore requests that a load application rate of two to four inches per minute be substituted for the requirement that the load be sustained

for 10 seconds. For reasons set forth below, the Director has determined that the demonstration procedure in the standard should remain a static test. In a static test of a child seating system, the capability of the system to sustain a specified load for a finite time period is considered more important than the load application rate. The requirement that the load be sustained for 10 seconds prevents removal of the load at the instant when the maximum specified value is attained. It also tends to produce more repeatable results from one test to another and from one test laboratory to another. Hence, the request is denied.

13. The Director also denies a request for modification of the standard to permit child seating systems to be tested, for purposes of "demonstrating" compliance, on a standard or simulated vehicle seat rather than on any vehicle with which they may be used. Manufacturers may, of course, use their own judgment as to how they test their products. But manufacturers are clearly in a better position than consumers to determine which vehicle seats will accept their child seating systems, and it is therefore appropriate for manufacturers to bear the legal and technical burden of determining and stating the range of suitability of their systems. To do this, they must ascertain by some appropriate means that their systems will perform as required when used in any vehicle for which they are recommended.

14. General Motors and American Motors have asked for approval of an alternate test device in place of the specified torso block. General Motors has also requested that alternate demonstration procedures, such as dynamic tests, be permitted. As stated above, the law does not require a manufacturer to use the test or test device specified in a standard, but allows him to use his judgment in designing a test program to ensure that his products conform to the standard. Manufacturers are encouraged to use the best test procedures that they can devise, as long as these procedures give an accurate indication of whether their products meet the requirements of the standard. No rulemaking action in this regard is called for.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 213 in § 571.21 of Title

49, Code of Federal Regulations, is revised to read as set forth below.

*Effective date.* The Bureau has determined that because of the significance of the issues raised by the petitions, and because many manufacturers have been unable to commit their resources to comply with requirements they knew to be under reconsideration and subject to change, additional time should be given to comply with

the standard. The effective date of the standard is, therefore, extended to April 1, 1971.

Issued on September 17, 1970.

Douglas W. Toms,  
Director,  
National Highway Safety Bureau.

**35 F.R. 14778**

**September 23, 1970**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 213

### Child Seating Systems

(Docket No. 2-15; Notice No. 6)

Motor Vehicle Safety Standard No. 213, Child Seating Systems, was published March 23, 1970 (35 F.R. 5120). In response to petitions for reconsideration filed by several manufacturers, the standard was amended September 23, 1970 (35 F.R. 14778). In addition, a notice of proposed rulemaking suggesting additional changes was issued simultaneously with that amendment (35 F.R. 14786). Since that time, Bolt Beranek and Newman, Inc. (on behalf of the Juvenile Products Manufacturers' Association), has requested clarification of certain provisions of the standard, and the Ford Motor Co. has requested certain amendments. This notice is issued in response to those requests.

Bolt Beranek and Newman has asked whether an adjustable head restraint may be used to meet the requirements of S4.6.1. It was intended that an adjustable head restraint could be used to meet the requirements of S4.6.1 provided it meets the other requirements of the standard, and the language of S4.6.1 is hereby amended to clarify the standard in that regard.

Bolt Beranek and Newman has also requested clarification of the release mechanism requirements of S4.9, which incorporate by reference the requirements and test procedures for the buckle of a Type 3 seat belt assembly in Standard No. 209. Bolt Beranek and Newman has argued that the present provision is not wholly consistent with the other requirements of Standard No. 213. It has pointed out, for example, that the present Standard No. 209 test procedure requires the release mechanism to be subjected to a force of 2,000 pounds, while Standard No. 213 requires the entire child seating system to be subjected to only a 1,000-pound force. It argues further that the present procedure unnecessarily restricts de-

sign, and does not permit, for example, a release mechanism that uses the child seat frame as one-half of the buckle assembly.

The Administration has found these arguments to have merit, and in response is amending the requirement and specifying an alternative test procedure for the release mechanism. The required force to which the release mechanism is subjected, when tested as presently specified, is lowered from 2,000 pounds to 1,000 pounds. The alternative test procedure allows the release mechanism to be tested as part of the entire child seating system. This alternative test will also permit testing of release mechanisms of different designs such as that previously described where one-half of the buckle assembly is incorporated into the child seat frame.

The alternative test procedure added by this notice, which provides for testing of the release mechanism as part of the overall child seat test, is more appropriate and simpler than the test procedure incorporated from Standard No. 209. As a result, a notice of proposed rulemaking is being issued concurrently with this amendment, proposing that this alternative test procedure be the only release mechanism test procedure after January 1, 1972. Both procedures would be retained until that date in order not to prejudice manufacturers who have relied upon the original test for certification purposes.

Provision has been made in the alternative test procedure to allow configuration of the torso block to eliminate excessive localized pressure caused by the surface of the torso block on the back of the release mechanism. This pressure is not regarded as representative of actual conditions, in that the hard surface of the torso block offers substantially more resistance than would

a child's body. This provision parallels a similar amendment to S5.3 of Standard No. 209, which becomes effective April 1, 1971, to coincide with the effective date of Standard No. 213.

The amendments requested by the Ford Motor Co. have been found unnecessary, as relief has been granted through interpretation of the existing provisions of the standard. For the information and guidance of the industry, the questions raised by Ford and the Administration's responses are as follows. Ford requested that paragraph S4.3 of the standard, which states, "The components of each child seating system that directly restrain the child shall be adjustable \* \* \*" be changed immediately to read as proposed in the notice of proposed rulemaking published September 23, 1970 (35 F.R. 14786), whose wording was, "Each child seating system component that is adjustable and is designed to restrain the child directly shall be sufficiently adjustable \* \* \*" It was not intended by the present wording, however, to require all child seating systems to have adjustable components to directly restrain the child. A system without adjustable components to directly restrain the child would not be considered to fail to comply, for that reason, with paragraph S4.3 of the standard. A final revision of this paragraph, clarifying the language of the

present provision, will be made after the comments to the notice of proposed rulemaking have been analyzed.

Ford's second request was for a change in the test procedure of S5.1, arguing that under this procedure the torso block applies an unstabilized concentrated load on the shield of the Ford system. In response, it has been stated that it is not mandatory under S5.1(d) of the standard that the load be applied to the torso block at a single point. It may be applied at two or more points as long as the intersection of the load application line and back surface of the torso block is not more than 8 inches or less than 6 inches above the bottom surface of the torso block. Thus, the load could be applied through a fixture attached to both the top and bottom of the torso block as long as the load application line is within these limits. During the test, however, only the torso block (not the attachment fixture) may contact the seating system.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 213 in § 571.21 of Title 49, Code of Federal Regulations, is amended . . . .

**36 F.R. 6895**  
**April 10, 1971**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 213

### Child Seating Systems

(Docket No. 2-15; Notice No. 8)

This notice amends Motor Vehicle Safety Standard No. 213, "Child Seating Systems", to allow additional forward horizontal movement of child seating systems, under test, when the vehicle seat is rearward of its forwardmost position. The amendment is intended to remove unjustified compliance burdens on child-seat manufacturers caused by certain vehicle seat belt configurations over which they have no control.

Motor Vehicle Safety Standard No. 213, specifying requirements for child seating systems, was issued March 23, 1970 (35 F.R. 5120), and amended September 23, 1970 (35 F.R. 14778) and April 10, 1971 (36 F.R. 6895). The standard presently limits the forward horizontal movement of a reference point on the torso block to 12 inches or less, when the torso block is installed in the child seating system and subjected to a 1,000-pound static force. Bolt Beranek and Newman, Inc. (on behalf of the Juvenile Products Manufacturers' Association) has requested that this requirement be changed in light of recent tests that have been conducted. It appears that in some cases involving late model passenger car front seats, the front outboard seat belt anchorage has been placed so that when the vehicle seat is adjusted to a rearward position, the angle of the seat belt is almost perpendicular to the floor when the belt is fastened. This angle, which the child seat manufacturer can in no way control, increases the forward movement of the torso block to more than 12 inches during the performance test.

The requirement for a maximum 12-inch forward movement is designed to limit as much as is practicable the forward movement of a child placed in a child seating system in the event of a crash. However, the distance between a child seating occupant and possibly injurious surfaces of the vehicle interior in front of the child increases as the vehicle seat is moved rearward. Thus the need to limit the forward horizontal movement to a fixed value, regardless of the adjusted position of the seat, is unwarranted in terms of the safety benefit achieved. The requirement of S4.11.1(a)(3) of Standard No. 213, that the forward horizontal movement be limited to 12 inches or less, is hereby amended to allow for a greater forward movement than 12 inches when the vehicle seat is adjusted rearward of its forwardmost position, to the extent of the distance that the seat has been moved rearward.

This amendment relieves restrictions presently contained in the standard, and imposes no additional burdens on manufacturers. Accordingly, good cause exists for an effective date less than 30 days from the date of issuance, and this amendment is effective upon publication in the *Federal Register* (6/29/71).

Issued on June 23, 1971.

Douglas W. Toms  
Acting Administrator

**36 F.R. 12224**  
**June 29, 1971**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 213

### Child Seating Systems

(Docket 2-15; Notice 9)

This notice makes certain amendments to Motor Vehicle Safety Standard No. 213, "Child Seating Systems", 49 CFR 571.213. Standard No. 213 was published March 26, 1970 (35 F.R. 5120), and amended September 23, 1970 (35 F.R. 14778), April 10, 1971 (36 F.R. 6895), and June 29, 1971 (36 F.R. 12224). This notice is based in part on notices of proposed rulemaking published September 23, 1970 (36 F.R. 14786) (Notice 5), and April 10, 1971 (36 F.R. 6903) (Notice 7).

The definition of "child seating system" is amended by this notice to eliminate the qualification that the device be designed to restrain children. This modification was proposed in the notice of September 23, 1970, and is adopted in the form proposed. The proposal was based on petitions which suggested the change as a means of eliminating a possible loophole in the standard, which allowed the marketing of devices which could be advertised for transporting children in motor vehicles, but which made no provision for protecting them in crashes. As a result of the amendment, all devices designed to seat children in motor vehicles must conform to the standard. One comment to the notice suggested that the language of the definition be further modified to make it clear that the vehicle seat is not included within the definition. This suggestion is not accepted. The NHTSA does not agree that the language of the definition includes or will be construed to include vehicle seats taken separately. Moreover, the vehicle seat may be an integral part of devices which would fall under the standard, and a specific exclusion of vehicle seats in the definition might create the erroneous impression that the extent that the

vehicle seat is utilized determines whether such a device is subject to the standard.

The standard is hereby clarified to make explicit the prohibition against recommending seating systems for use in other than designated seating positions. The NHTSA is of the opinion that Standard No. 213 at least implicitly prohibits manufacturers from doing this. The labeling requirements of paragraph S4.1(e) specify that the label affixed to each child seating system must specify "both the types of motor vehicles and the designated seating positions . . . in which the system is either recommended or not recommended for use." Paragraph S4.4 requires each child seating system to be designed and constructed so that when it is installed in accordance with the manufacturer's instructions it shall be restrained against movement by either a type 1 or type 2 seat belt assembly. These seat belt assemblies are required to be installed at designated seating positions, pursuant to Motor Vehicle Safety Standard No. 208, Occupant Crash Protection (49 CFR 571.208).

The proposal of September 23, 1970, would have amended paragraph S4.3, to require only child seats having adjustable restraint systems (as distinguished from those using stationary impact shields) to be adjustable to fit all children for which they are recommended. An NHTSA opinion to this effect was published in the preamble to the amendment published April 10, 1971. The NHTSA has decided that the proposed language is too broad. As written, it does not require even belt restraint systems to be adjustable. The NHTSA intended only that non-adjustable restraint designs, such as impact pads, need not be made adjustable. Consequently, this amendment modifies S4.3 to make it clear that

belt restraint systems must be adjustable. In response to a comment, the NHTSA has modified the proposed requirement that the restraint system fit snugly to apply only to belt systems.

The notice of September 23, 1970, proposed more extensive head restraint requirements and test procedures than the standard presently specifies. The NHTSA has made public its plans to institute a dynamic test as the method for testing child seating system performance. These requirements are presently under development, and appropriate notice will be issued once NHTSA efforts have been completed. The NHTSA has decided to defer modification of head restraint requirements, because such requirements would require extensive redevelopment, until they can be incorporated into the dynamic performance requirements. The NHTSA has, however, modified the method for measuring head restraint height. The revised method utilizes the intersection of the longitudinal centerline of the seating surface with a plane through the torso block reference point as the base from which the head restraint measurement is to be made. The NHTSA agrees with the comments that this method is more precise than the existing procedure, as it is not based on the angle of the seat or the attitude of the child seating surface.

Requirements proposed in the notice of September 23, 1970, regarding energy absorbing material are also not adopted, because of the impending dynamic test procedures. Two minor amendments, however, are adopted. The first changes "energy-absorbing material" to "force-distributing material". Certain comments have indicated, and the NHTSA agrees, that the latter term is a more accurate description of these materials. The second amendment, based on certain comments, increases the number of components

that need not be covered with these materials and need not meet minimum radius requirements, to include belt adjustment hardware attached only to webbing. The padding requirements of S4.10.1 are not practical for this belt adjustment hardware. Moreover, by exempting these components from the requirements, manufacturers are free to utilize smaller belt adjustment hardware, which is less hazardous in impact conditions than the larger belt adjustment components which would otherwise be necessary.

Paragraph S4.10 is further amended, as proposed in the notice of September 23, 1970, to eliminate the exemption to the padding requirements for components contactable by the head. The NHTSA has concluded that this exemption, for components of at least 24 square inches, is inappropriate for components contactable by the head, as the size of a component is not necessarily related to its ability to cushion head as compared to torso impacts.

The notice of April 10, 1971, proposed that the requirements of paragraph S4.9 for belt mechanism release be made part of child system test procedures, and to delete the existing test incorporated from Standard No. 209. No objections were received, and that proposal is adopted.

In light of the above, Motor Vehicle Safety Standard No. 213, "Child Seating Systems" appearing at 49 CFR § 571.213, is amended . . .

Effective date: November 1, 1973.

Sec. 103, 112, 114, and 119, P.L. 89-563, 80 Stat. 718, (15 U.S.C. 1392, 1401, 1403, 1407; delegation of authority at 49 CFR 1.51.)

Issued on March 16, 1973.

James E. Wilson  
Acting Administrator

**38 F.R. 7562**  
**March 23, 1973**

## MOTOR VEHICLE SAFETY STANDARD NO. 213

### Child Seating Systems

(Docket No. 2-15)

**51. Purpose and scope.** This standard specifies requirements for child seating systems to minimize the likelihood of death and injury to children in vehicle crashes or sudden stops by ejection from the vehicle, contact with the vehicle interior, or contact with a child seating system.

**52. Application.** This standard applies to child seating systems for use in passenger cars, multipurpose passenger vehicles, trucks, and buses. This standard does not apply to Type 3 seat belt assemblies, as defined in Federal Motor Vehicle Safety Standard No. 209, or to systems for use only by recumbent or semirecumbent children.

**53. Definition.** ["Child seating system" means an item of motor vehicle equipment for seating a child being transported in a motor vehicle. (38 F.R. 7562—March 23, 1973. Effective: 11/1/73)]

#### 54. Requirements.

**54.1 Labeling.** Each child seating system shall have a label permanently affixed to it. The label shall contain the following information in the English language in letters and numerals not less than  $\frac{3}{32}$ -inch high:

(a) The manufacturer's name. However, a distributor's name may be placed on the label in place of the manufacturer's name if the distributor assumes responsibility for all duties and liabilities imposed on the manufacturer by the National Traffic and Motor Vehicle Safety Act with respect to the system.

(b) Model number or name.

(c) Month and year of manufacture.

(d) Place of manufacture (city and State or foreign country). However, if the label contains

the distributor's name in place of the name of the manufacturer, the city and State or foreign country of the distributor's principal offices shall appear on the label.

(e) [A statement describing in general terms both the types of motor vehicles and the designated seating positions in those vehicles in which the system is either recommended or not recommended for use. A child seating system may not be recommended for use in other than a designated seating position. The following, either stated separately or in combination, are examples of acceptable statements: (38 F.R. 7562—March 23, 1973. Effective: 11/1/73)]

(1) "Recommended for use only on bench seats of passenger cars manufactured after January 1, 1968, by the ----- Motor Company."

(2) "Recommended for use only on seats that have head restraints on (make or model designation(s)) passenger cars manufactured after January 1, 1969."

(3) "Not recommended for use in trucks and buses."

(f) Except as provided in S4.1.1, the following statement: "Not for use on hinged or folding vehicle seats or seat backs unless the seat or seat back is equipped with a latch."

(g) Unless the system is a rearward-facing child seating system, the following statement: "For use only on forward-facing vehicle seats."

(h) The following statement, inserting in the blank spaces the manufacturer's recommendations of the maximum height and the minimum and maximum weight of children who can safely occupy the system: "For use only by children who weigh between ----- and ----- pounds and whose height is ----- inches or less."

**S4.1.1 Exemption.** A part of the warning required by S4.1(f) relating to use of a child seating system on a hinged or folding vehicle seat or on a vehicle seat having a hinged or folding back, or on both, may be omitted in the following circumstances:

(a) The part of the warning that relates to vehicle seats may be omitted if the child seating system includes a component to restrain a hinged or folding vehicle seat and if, when the system and the component are both installed in the seat in accordance with the recommendation required by S4.1(e) and the instructions required by S4.2, the component will not fail when a forward longitudinal force equal to 20 times the weight of the vehicle seat is applied through the seat's center of gravity and maintained for 10 seconds.

(b) The part of the warning that relates to seat backs may be omitted if the child seating system includes a component to restrain the hinged or folding seat back and if, when the system and the component are both installed in the vehicle seat in accordance with the recommendation required by S4.1(e) and the instructions required by S4.2, the component will not fail when a forward longitudinal force equal to 20 times the weight of the vehicle seat back is applied through the back's center of gravity and maintained for 10 seconds.

(c) The entire warning may be omitted if the child seating system includes the components for restraining the seat and seat back specified in (a) and (b).

**S4.2 Installation instructions.** Each child seating system shall be accompanied by an instruction sheet, providing a step-by-step procedure (which may include diagrams) for installing the system in the vehicle in which it is recommended for use in accordance with S4.1(e), securing the system with a Type 1 or Type 2 seat belt assembly, positioning a child in the system, and adjusting the system to fit the child.

**S4.3 Adjustment.** [Each adjustable child seating system component and each belt system designed to restrain the child directly shall be sufficiently adjustable to fit a child of any size for which the seat is recommended pursuant to paragraph S4.1(h) and who is positioned in the system in accordance with the instructions re-

quired by S4.2. A belt system used to restrain the child directly shall be sufficiently adjustable to fit snugly any such child. (38 F.R. 7562—March 23, 1973. Effective: 11/1/73)]

**S4.4 Attachment.** Each child seating system shall be designed and constructed so that—

(a) the system has no provision for attachment to a vehicle seat back other than by means of a component which is inserted between the vehicle seat back and the vehicle seat cushion; and

(b) when installed in accordance with the instructions required by S4.2, a system installed on a forward-facing vehicle seat shall be restrained against forward movement, and a system installed on a rearward-facing vehicle seat shall be restrained against rearward movement, by a Type 1 or Type 2 seat belt assembly as defined in Federal Motor Vehicle Safety Standard No. 209.

**S4.5 Distribution of restraint forces.**

**S4.5.1 Forward-facing systems.** When a forward-facing child seating system is installed in a vehicle and a child is positioned in the system in accordance with the instructions required by S4.2, components of the child seating system and the vehicle's seat belt assemblies which apply restraining forces directly to the child shall, during forward movement of the child relative to the vehicle in which the system is installed, distribute those forces on both the pelvis and thorax of the child. Restraint forces may also be distributed over other areas of the child's body as long as both the pelvis and thorax are restrained.

**S4.5.2 Rearward-facing systems.** When a rearward-facing child seating system is installed in a vehicle and a child is positioned in the system in accordance with the instructions required by S4.2, the components of the child seating system and the vehicle's seat belt assemblies that apply restraining forces directly to the child shall—

(a) during forward movement of the child relative to the vehicle in which the system is installed, distribute those forces on both the back of the child's torso and the back of the child's head; and

(b) during rearward movement of the child relative to the vehicle in which the system is

installed, distribute those forces on both the pelvis and thorax of the child.

Restraint forces may also be distributed over other areas of the child's body as long as both the back of the torso and head are restrained during forward movement and both the pelvis and thorax are restrained during rearward movement.

**S4.6 Head restraint.**

**S4.6.1** [Except as provided in S4.6.2, each forward-facing child seating system shall have a head restraint that limits rearward angular displacement of the child's head relative to the child's torso line. The height of the head restraint, measured as the straight line distance between the highest point at the lateral center of the head restraint and the point on the longitudinal centerline of the seating surface at the intersection of a plane parallel to the rear surface of the torso block through the torso block reference specified in S5.1, when the torso block is positioned in the child seating system in accordance with the instructions required by S4.2, shall be as follows: (38 F.R. 7562—March 23, 1973. Effective: 11/1/73)]

If the maximum weight of children for whom the system is recommended is:	The height of the head restraint shall be at least: (inches)
20 pounds or less -----	15
More than 20 pounds but not more than 25 pounds -----	16.2
More than 25 pounds but not more than 30 pounds -----	17.9
More than 30 pounds but not more than 35 pounds -----	18.9
More than 35 pounds -----	20

**S4.6.2** Subparagraph S4.6.1 does not apply to a child seating system if—

(a) In accordance with S4.1(e), the system is recommended for use only at designated seating positions in makes and models of vehicles at which the vehicle's seat back or head restraint limits rearward angular displacement of the child's head relative to the child's torso line; and

(b) When the system is installed in accordance with the instructions required by S4.2, the distance from the lowest point at the lateral center of the child seating surface to a horizontal plane tangent to the highest point of the vehicle

seat back or head restraint in its highest adjustable position, at the lateral center of the designated seating position, measured on a line parallel to the rear surface of the vehicle seat back, is at least equal to the seat back height specified for the seating system in S4.6.1.

**S4.7 Webbing.** If a child seating system has webbing to distribute restraint forces as required by S4.5—

(a) the webbing that directly contacts the child's body shall have a minimum width of 1½ inches; and

(b) the webbing that sustains restraint forces shall meet the requirements for webbing in a Type 3 seat belt assembly specified in paragraphs S4.2(b) through S4.2(h) of Federal Motor Vehicle Safety Standard No. 209.

**S4.8 Hardware.** Attachment hardware of each child seating system that sustains restraint forces shall meet the corrosion resistance requirements for attachment hardware of a seat belt assembly specified in paragraph S4.3(a) of Federal Motor Vehicle Safety Standard No. 209. Buckles, retractors, and metallic parts other than attachment hardware that sustain restraint forces shall meet the corrosion resistance requirements for buckles, retractors, and metallic parts other than attachment hardware of a seat belt assembly specified in paragraph S4.3(a) of Federal Motor Vehicle Safety Standard No. 209.

**S4.9 Release mechanism.** [The mechanism for releasing components of a child seating system that directly restrain the child shall release when a force of not more than 20 pounds is applied in accordance with S5.3. (38 F.R. 7562—March 23, 1973. Effective: 11/1/73)]

**S4.10 Impact protection.**

**S4.10.1 [Head and Torso.** Except as provided in S4.10.2, any rigid component of a child seating system (except restraint buckles, and belt adjustment hardware attached only to webbing) that, during forward, right-side, left-side or rearward impact, may contact the head or torso of a child within the height and weight range recommended in accordance with S4.1(h) shall:

(a) Have no corner or edge with a radius of less than one-quarter inch; and

(b) Except as provided in S4.10.2, be covered with deformable force-distributing material having a thickness of at least one-half inch. (38 F.R. 7562—March 23, 1973. Effective: 11/1/73)】

**S4.10.2 [Exception.** S4.10.1(b) does not apply to the area of a rigid back or side of a child seating system that is contactable only by the child's torso, if the contactable area of the back or side is at least 24 square inches. (38 F.R. 7562—March 23, 1973. Effective: 11/1/73)】

**S4.11 Performance.**

**S4.11.1 All child seating systems.**

(a) When tested in accordance with S5.1 each child seating system shall—

- (1) Retain the torso block in the system;
- (2) Sustain a static load of 1,000 pounds in the forward direction; and

【(3) Restrict forward horizontal movement of the torso block reference point:

(i) When the vehicle seat is in its forwardmost adjustment position, to not more than 12 inches;

(ii) When the vehicle seat is rearward of its forwardmost adjustment position, to not more than 12 inches plus the distance, measured horizontally, that the vehicle seat is rearward of its forwardmost adjustment position. (36 F.R. 12224—June 29, 1971. Effective: 6/29/71)】

(b) A child seating system in which the attitude of the child is adjustable pursuant to the instructions provided in accordance with paragraph S4.2 shall meet these requirements at each designed adjustment position.

**S4.11.2 Rearward-facing child seating systems.**

(a) When tested in accordance with S5.2, each rearward-facing child seating system shall—

- (1) Retain the torso block in the system;
- (2) Sustain a static load of 500 pounds in the rearward direction; and
- (3) Restrict rearward horizontal movement of the torso block reference point to 12 inches or less.

(b) A child seating system in which the attitude of the child is adjustable pursuant to the

instructions provided in accordance with paragraph S4.2 shall meet these requirements at each designed adjustment position.

**S5. Demonstration procedures.**

**S5.1 All seating systems.** The child seating system shall be subjected to a static load, using the torso block shown in Figure 6 of Federal Motor Vehicle Safety Standard No. 209, as follows:

(a) Locate the torso block reference point, which is 2.9 inches above the bottom surface of the torso block and 2.1 inches forward of the back surface of the torso block.

(b) Install the system in accordance with the manufacturer's instructions required by S4.2 on a vehicle seat other than a seat on which the manufacturer does not recommend its installation in the recommendation required by S4.1(e).

(c) Position the torso block in the system in accordance with the manufacturer's instructions required by S4.2, and adjust the system in accordance with those instructions.

(d) Apply an increasing load to the torso block in a forward direction, not more than 15° and not less than 5° above the horizontal, until a load of 1,000 pounds is achieved. The intersection of the load application line and the back surface of the torso block, at the time that the force removes the slack from the load application system, shall not be more than 8 inches or less than 6 inches above the bottom surface of the torso block. Maintain the 1,000-pound load for 10 seconds.

(e) Measure the horizontal movement of the torso block reference point.

**S5.2 Rearward-facing child seating systems.** The rearward-facing child seating system shall be subjected to the demonstration procedure specified in S5.1, except that—

(a) A load of 500 pounds shall be achieved; and

(b) The load shall be applied in a rearward direction.

【**S5.3 Release mechanism.** Conduct the following tests for forward-facing and rearward-

facing child seating systems, as appropriate, using a torso block configured so that it does not contact the buckle in a manner as to affect the buckle release force.

**55.3.1** For forward-facing child seating systems—

- (a) Test the system with a 1,000-pound force as specified in S5.1;
- (b) Reduce the force to 45 pounds; and
- (c) Release the mechanism in a manner typical of that employed in actual use.

**55.3.2** For rearward-facing child seating systems—

- (a) Test the system with a 500-pound force as specified in S5.2;
- (b) Reduce the force to 45 pounds; and
- (c) Release the mechanism in a manner typical of that employed in actual use. (36 F.R. 6895—April 10, 1971. Effective: 4/10/71)】

**35 F.R. 14778**  
**Sept. 23, 1970**



**PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 214****Side Door Strength—Passenger Cars****(Docket No. 2-6; Notice No. 3)**

The purpose of this amendment to §571.21 of Title 49, Code of Federal Regulations, is to add a new motor vehicle safety standard that sets minimum strength requirements for side doors of passenger cars. The standard differs in only a few details from the notice of proposed rulemaking published on April 23, 1970 (35 F.R. 6512).

As noted in the proposal of April 23, the percentage of dangerous and fatal injuries in side collisions increases sharply as a maximum depth of penetration increases. With this in mind, the notice of proposed rulemaking stressed the need for a door that offers substantial resistance to intrusion as soon as an object strikes it. The proposal required a door to provide an average crush resistance of 2,500 pounds during the first 6 inches of crush. One comment stated that equivalent protection can be provided by structures further to the interior of the door and that the proper measure of protection is the force needed to deflect the inner door panel rather than that needed to deflect the outer panel. Although inboard mounted structures may be effective in preventing intrusion if the door has a large cross section, with a correspondingly large distance between the protective structure and the inner panel, the standard as issued reflects the determination that doors afford the greatest protection if the crush resisting elements are as close to the outer panel as possible. It follows from this determination that the surface whose crush is to be measured must be the outer panel rather than the inner one. The value specified for the initial crush resistance has, however, been reduced from 2,500 pounds to 2,250 pounds, a value that has been determined to be more appropriate, particularly for lighter vehicles.

Two comments suggested that the crush distance should be the distance traveled by the loading device after an initial outer panel distortion caused by a "pre-load." This suggestion is without merit, in that it would permit use of needlessly light outer panel materials and thereby diminish the distance between the protective elements of the door and the occupants.

The comments revealed a considerable difference of opinion concerning the value and validity of the concept of "equivalent crush resistance." The equivalent crush resistance was to be derived by adding  $\frac{1}{4}$  (3000-W) to the average force required to crush the door 12 inches. It had been thought that the resulting bias against heavier vehicles was necessary in that their greater mass would cause them to move sideways less in a collision than lighter vehicles, with more of the impacting force being absorbed by the door. Recent studies, however, show that occupants of heavier vehicles involved in side collisions generally suffer a lower proportion of serious injuries and fatalities than persons in lighter vehicles. In light of these studies and other information, the standard retains the basic crush resistance requirement, but deletes the weight correction factor. Since it is no longer appropriate to use the term "equivalent crush resistance," in its place the standard employs the phrase "intermediate crush resistance." The slightly lower figure of 3,500 pounds has been substituted for the 3,750 pound force proposed in the notice. The effect of the change is to increase slightly the crush resistance required for vehicles having curb weight less than 1,800 pounds, and to decrease it slightly for vehicles weighing more than 1,800 pounds.

Similar reasoning lies behind a change in the requirement for peak crush resistance. The available information does not support a peak crush requirement that increases indefinitely with increasing vehicle curb weight. The standard therefore sets a ceiling of 7,000 pounds to the requirement that the door have a peak crush resistance of twice the vehicle's curb weight. In effect, the requirement is unchanged from the proposal for vehicles weighing less than 3,500 pounds, and is diminished for vehicles exceeding that weight.

Several comments suggested that the vehicle should be tested with all seats in place, since the seats may provide protection against intrusion in side impacts. It is recognized that proper seat design can contribute to occupant safety. The retention of the seat would, however, introduce a variable into the test procedure whose bearing on safety is not objectively measurable at this time. For this reason, the standard adopts the proposed requirement that the vehicle be tested with its seats removed.

It was suggested that the location of force application should be changed. The location has

been designated to approximate the weakest section of that part of the door structure likely to be struck by another vehicle. The area designated has been found the most appropriate for the bulk of the automobile population.

Effective date: January 1, 1973.

The majority of comments stated that an effective date of September 1, 1971, as initially proposed, would not be feasible. After evaluation of the comments and other information, it has been determined that the structural changes required by the standard will be such that many manufacturers would be unable to meet the standard if the September 1, 1971, effective date were retained. It has been decided that there is good cause for establishing an effective date more than 1 year after issuance of the rule.

In consideration of the above, Standard No. 214 is adopted as set forth below.

Issued on October 22, 1970.

Douglas W. Toms,  
Director.

**35 F.R. 16801**  
**October 30, 1970**

## MOTOR VEHICLE SAFETY STANDARD NO. 214

### Side Door Strength—Passenger Cars

(Docket No. 2-6; Notice No. 3)

**S1. Purpose and scope.** This standard specifies strength requirements for side doors of a motor vehicle to minimize the safety hazard caused by intrusion into the passenger compartment in a side impact accident.

**S2. Application.** This standard applies to passenger cars.

**S3. Requirements.** Each vehicle shall be able to meet the following requirements when any of its side doors that can be used for occupant egress are tested according to S4.

**S3.1 Initial crush resistance.** The initial crush resistance shall be not less than 2,250 pounds.

**S3.2 Intermediate crush resistance.** The intermediate crush resistance shall not be less than 3,500 pounds.

**S3.3 Peak crush resistance.** The peak crush resistance shall be not less than two times the curb weight of the vehicle or 7,000 pounds, whichever is less.

**S4. Test procedures.** The following procedures apply to determining compliance with section S3:

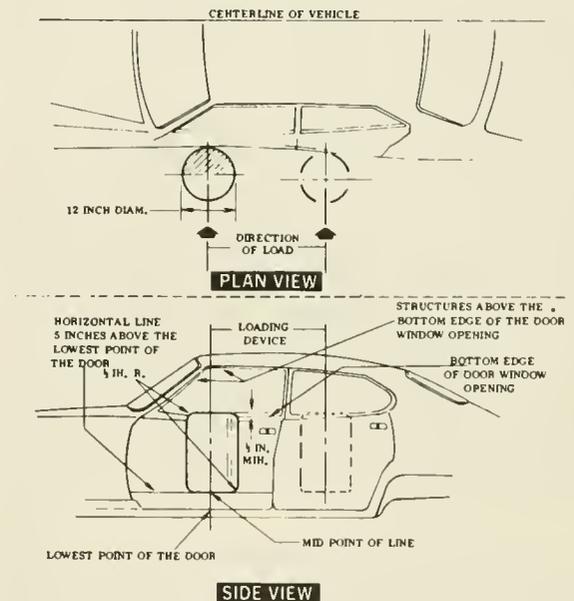
(a) Remove from the vehicle any seats that may affect load upon, or deflection of, the side of the vehicle. Place side windows in their uppermost position and all doors in locked position. Place the sill of the side of the vehicle opposite to the side being tested against a rigid unyielding vertical surface. Fix the vehicle rigidly in position by means of tiedown attachments located at or forward of the front wheel centerline and at or rearward of the rear wheel centerline.

(b) Prepare a loading device consisting of a rigid steel cylinder or semi-cylinder 12 inches in diameter with an edge radius of one-half inch.

The length of the loading device shall be such that the top surface of the loading device is at least one-half inch above the bottom edge of the door window opening but not of a length that will cause contact with any structure above the bottom edge of the door window opening during the test.

(c) Locate the loading device as shown in Figure I (side view) of this section so that:

- (1) Its longitudinal axis is vertical;
- (2) Its longitudinal axis is laterally opposite the midpoint of a horizontal line drawn



LOADING DEVICE LOCATION AND APPLICATION TO THE DOOR

FIGURE I

across the outer surface of the door 5 inches above the lowest point of the door;

(3) Its bottom surface is in the same horizontal plane as the horizontal line described in subdivision (2) of this subparagraph; and

(4) The cylindrical face of the device is in contact with the outer surface of the door.

(d) Using the loading device, apply a load to the outer surface of the door in an inboard direction normal to a vertical plane along the vehicle's longitudinal centerline. Apply the load continuously such that the loading device travel rate does not exceed one-half inch per second until the loading device travels 18 inches. Guide the loading device to prevent it from being rotated or displaced from its direction of travel. The test must be completed within 120 seconds.

(e) Record applied load versus displacement of the loading device, either continuously or in increments of not more than 1 inch or 200 pounds for the entire crush distance of 18 inches.

(f) Determine the initial crush resistance, intermediate crush resistance, and peak crush resistance as follows:

(1) From the results recorded in subparagraph (e) of this paragraph, plot a curve of load versus displacement and obtain the integral of the applied load with respect to the crush distances specified in subdivisions (2) and (3) of this paragraph. These quantities, expressed in inch-pounds and divided by the specified crush distances, represent the average forces in pounds required to deflect the door those distances.

(2) The initial crush resistance is the average force required to deform the door over the initial 6 inches of crush.

(3) The intermediate crush resistance is the average force required to deform the door over the initial 12 inches of crush.

(4) The peak crush resistance is the largest force recorded over the entire 18-inch crush distance.

**October 30, 1970**  
**35 F.R. 16801**

## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 215

### Exterior Protection—Passenger Cars

(Docket Nos. 1-9 and 1-10; Notice No. 4)

The purpose of this notice is to establish a new Federal Motor Vehicle Safety Standard No. 215, Exterior Protection—Passenger Cars. The standard will require passenger cars to withstand specified low-speed impacts at the front and rear without damage to lighting, fuel, exhaust, cooling, or latching systems. A public meeting on the subject was held on April 2, 1970, and a notice of proposed rulemaking was published on November 24, 1970 (35 F.R. 17999). The comments received at the meeting and in response to the notice have been considered in the preparation of this rule. The standard is intended to achieve the goals of preventing low-speed collisions from impairing the safe operation of vehicle systems and of reducing the frequency of override or underride in collisions at higher speeds.

Many comments to the docket indicated that manufacturers would encounter substantial difficulties in meeting the pendulum-test requirements at the beginning of the 1973 model year. The industry evidently has been preparing for a substantial upgrading of passenger car bumpers for the 1973 models. There are, however, considerable differences in the designs selected, with respect to such aspects as the height of the bumpers, both top and bottom, the extent to which they protect the vehicle corners, the material with which they are faced and the details of their configuration. All these aspects have a considerable effect on whether the vehicles would meet the pendulum-test requirement. In the pendulum test a precisely configured block is used as a striker, with the requirement that only a particular projecting ridge on the block may contact the vehicle. The difficulties of compliance are compounded by the fact that manufac-

turers are in an advanced stage of preparation for the 1973 models.

Some of the comments to the docket suggested that a barrier test should be substituted for the pendulum, at least for the first phase of the requirements. A barrier test does not by itself involve the configuration of the front and rear contact surfaces. It does, however, establish the basic strength of those surfaces and the supporting structures, and the vehicle's overall ability to withstand impacts at the specified energy levels. It has been decided, therefore, to utilize fixed barrier collision tests in the first phase, model year 1973, and upgrade the requirements by adding pendulum tests for model year 1974.

It was suggested in several of the comments that less bumper strength was needed on the rear than on the front, since vehicles are struck less frequently and less severely, from a statistical standpoint, from that direction. Many of the designs presently in preparation for 1973-model production offer rear protection in the 2-to-3-m.p.h. range, as compared with 5 m.p.h. at the front. In recognition of these factors, the requirement for rear impact protection on 1973 models is a barrier impact at 2½ m.p.h., while the front is required to meet a 5-m.p.h. barrier impact.

For the 1974 models (effective September 1, 1973), a pendulum test requirement is added in a form similar to that proposed in the November 24 notice, with a front impact speed of 5 m.p.h. and a rear impact speed of 4 m.p.h.

Several manufacturers stated that the requirement for multiple impacts on front and rear was too severe. The NHTSA considers it essential for a bumper to be able to sustain an impact without impairment of its protective capabilities, and has

therefore retained the multiple impact requirement. However, it is recognized that the requirement as proposed would permit up to six impacts at the same point and that the vehicle could fail to conform simply by denting the bumper until it contacts a plane surface of the test device. Accordingly, the standard provides that impacts must be at least 2 inches apart laterally.

A related concern expressed in several comments was that the vehicle corners would have to be very stiff in order to withstand longitudinal impacts in which most of the test device would be outboard of the corner. Since corner protection is also required and a separate corner impact procedure is provided, the Administration has determined that the longitudinal impacts should be conducted with the test device completely inboard of the corners, and has amended the requirement accordingly.

The configuration of the test device's impact face attracted several comments. Upon review, it has been decided that a 3-inch offset in the upper portion of the device is unnecessary to establish the upper limit on the height of the vehicle's protective surface. For impacts at a height of 20 inches, the upper surface (plane B) is therefore offset by 1½ inches rather than 3 inches. Several comments indicated that the cross section radius of the impact ridge should be increased from ½ inch to 1 inch or more or that the ridge should be removed altogether. Review of the reasons advanced for the proposed changes does not give sufficient cause to change the shape of the ridge. Its design is intended to represent a fairly hostile impacting surface, but it is not unrepresentative of the objects likely to be encountered by a vehicle.

A number of comments stated that the requirement for a corner impact at 45° was too severe and that it would necessitate undesirable changes in the bumper wrap-around. Upon consideration of these comments and supporting data regarding the frequency of angular impacts, it has been decided to reduce the direction of the corner impact to 30° from longitudinal.

It appeared from the comments that one of the most difficult problems from the standpoint of vehicle design arose from the requirement

that impacts be conducted at any height from 20 inches to 14 inches. To assure themselves of conformity at the 14-inch height, manufacturers of larger cars would have had to lower the bumper to a point where it would significantly interfere with the vehicle's ability to negotiate driveways and ramps. A 6-inch range in the test heights was found unnecessary, since manufacturers will have to exceed the range somewhat to ensure conformity. Accordingly, the NHTSA has decided to raise the minimum test height to 16 inches. As adopted the standard specifies three impacts, front and rear, at any height between 20 inches and 16 inches.

Although the standard does not permit repairs to be conducted after an impact, the Administration has found merit in the suggestion that an interval should be specified between tests to permit systems with self-recovery features to return to their original position. Accordingly, an interval of 30 minutes is specified between impacts.

One comments pointed out that confusion might arise from the manner in which the test device's weight was specified. The standard therefore refers to the effective impacting mass of the test device and specifies that this mass is equal to the mass of the impacted vehicle.

Further work is in process with respect to the requirements effective September 1, 1973, and it is anticipated that additions to or refinements of those requirements would be made in the near future.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 215, Exterior Protection, is added to § 571.21 of Title 49, Code of Federal Regulations, reading as set forth below.

*Effective date*, September 1, 1972, with further requirements effective September 1, 1973, as noted in the text of the rule. Because of the leadtime necessary for preparation for production, it is found, for good cause shown, that an effective date more than 1 year later than the issue date is in the public interest.

Issued on April 9, 1971.

Douglas W. Toms.  
Acting Administrator.

36 F.R. 7218  
April 16, 1971

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 215

### Exterior Protection—Passenger Cars

(Dockets No. 1-9 and 1-10; Notice 5)

The purpose of this notice is to respond to petitions requesting reconsideration of Motor Vehicle Safety Standard No. 215, *Exterior Protection*, issued April 9, 1971 (36 F.R. 7218). The petitions are denied in part and granted in part. To the extent that changes to the standard in response to petitions have been found to add to the performance requirements, they are included in a notice of proposed rulemaking published in this issue of the *Federal Register* (36 F.R. 11868).

Subsequent to issuance of the standard, petitions for reconsideration were submitted by Chrysler, American Motors, Fiat, Japanese Automobile Manufacturer's Association, Peugeot, Ford, General Motors, Center for Auto Safety, Volkswagen, DeTomaso, and Mr. Jack F. Fenton, a member of the California State Assembly. In issuing this notice, the NHSTA has reviewed each of the issues raised in the petitions.

Few petitioners took issue with the fixed barrier impact requirement effective January 1, 1972. Two European manufacturers requested that the frontal speed be lowered to 2½ mph. No supporting data were submitted, however. The NHTSA continues to regard a 5-mph impact as an appropriate measure of frontal protection and the petitions are denied. Among the domestic manufacturers, American Motors requested that the license plate lamps be exempted from the protective criteria of S5.3.1, on the grounds that the best location for the license plate lamps is in a bumper insert that is difficult to insulate from shock. Since the license plate lamps have little bearing on operational safety, and their protection would in some cases require a disproportionate degree of design alteration, the request appears reasonable and the license plate lamps are exempted from the protection criteria.

The pendulum impact test requirements, effective September 1, 1973, were the subject of a divergent group of comments. With its multiple impacts at varying heights at 5 mph in the front and 4 mph in the rear, the pendulum test imposes two basic requirements: the management of the total energy of the pendulum, and the configuration of the front and rear surfaces in order to accommodate the pendulum's impact ridge.

Because of the limited width of the pendulum, as compared to a fixed collision barrier, the energy imparted by the pendulum to the portion of the vehicle it strikes is roughly equivalent to the energy transmitted to that portion during a barrier test at the same speed. The rear 4-mph pendulum test therefore approximates the energy level of a 4-mph barrier test and represents an appreciable increase over the 2½ mph rear barrier test required in 1972. General Motors requested a postponement of the 4-mph requirement to 1975 to minimize the costs of retooling necessary to meet the increased requirements. It has been determined that early adoption of the 4-mph pendulum test is desirable, and the requested postponement is therefore denied. In light of the responses to the rulemaking, the NHTSA is considering additional rulemaking to increase the pendulum speed, as well as the barrier speed, to 5 mph for rear impacts. This course of action is advocated in petitions by the Ford Motor Company, The Center for Auto Safety, and Mr. Fenton, and is proposed in a notice published in this issue of the *Federal Register* (36 F.R. 11868).

A number of petitions stated that the width and aggressiveness of bumpers that can withstand 5-mph corner impacts will create safety problems in various types of impact situations, and that the overall balance of vehicle protection

and crash-worthiness would be better served by setting the impact requirements for the vehicle corners at a somewhat lower level. Review of the available information indicates that this position has merit, and an adjustment is therefore made in the speed of corner impacts, from 5 mph in the front and 4 mph in the rear, to 3 mph at both front and rear.

The impact ridge on the pendulum test device performs the vital functions of assuring basic uniformity in bumper height and of limiting the surface angularity that contributes to under-ride and over-ride. The NHTSA adheres to its finding that the impact ridge is a reasonable and practicable means of assuring the desired protection. It appears, however, that the shape of the ridge as the standard was issued—its cross section an equilateral triangle with a rounded apex—could produce some undesirable side effects. Petitioners argued that this relatively narrow and sharp ridge unjustifiably restricts the use of resilient materials and energy-absorbing designs that represent the most effective methods of meeting the objectives of the standard. Petitioners variously requested that contact with the plane behind the ridge be permitted, or that the impact ridge be broadened, thereby reducing its tendency to indent the vehicle's surface.

Upon review, it has been determined that a broadening of the ridge is desirable, both because of the greater latitude allowed in the selection of resilient materials, and because of other effects on the size and shape of the bumpers. Several petitions argued that the present standard requires a manufacturer to design an excessively wide bumper in order to meet the protective criteria under the full range of vehicle weights and manufacturing tolerances. A broader impact ridge would alleviate this problem, and should also reduce the penetration of the license plate opening that was seen as a problem by some manufacturers. The NHTSA has determined that most of the meritorious requests in the petitions can be satisfied by the adoption of a broader impact ridge. The pendulum design suggested by the Ford Motor Company has been found to have considerable merit, and the standard is therefore amended to incorporate impact ridge dimensions similar to those requested by

Ford. To the extent that the remaining petitions relating to bumper height and shape are not satisfied by this amendment, they are denied. The Chrysler request to limit corner testing to 20-inch height is premised on difficulties that are partially alleviated by the modification of the ridge, and the petition in that respect is accordingly denied.

General Motors requested that the height range for the pendulum test be changed to 18-to-22 inches, from the present 16-to-20 inch specification. On review of all available information, NHTSA has determined that such a change would not be desirable, and the petition is denied. It should be noted, however, that the amended design of the impact face retains the 3-inch separation between the upper edge of the ridge and Plane B, so that manufacturers may design bumpers extending some distance above the 20-inch level.

In response to requests to clarify the sequence of testing in effect September 1, 1973, S5.2 is amended to make it clear that the pendulum tests are to precede the barrier tests. Other minor adjustments have been made in the protective criteria to make it clear that the vehicle's hood, trunk, and doors—and not just their latching systems—must be operable in the normal manner (S5.3.2), and to substitute the more general term "leaks" in S5.3.4 in place of the term "open joints."

The petition from the Center for Auto Safety suggested the addition of further protective criteria to ensure substantially complete vehicle protection. A notice proposing such additional criteria is published in today's issue of the *Federal Register* (36 F.R. 11868). The Center also requested the addition of requirements limiting the acceleration imparted to occupants during impacts. The Ford Motor Company also suggested that the NHTSA consider rulemaking relating to limits on occupant acceleration, and indicated that it intended to submit data on the subject in September of 1971. Although review of the available information does not indicate that occupant accelerations will be significantly increased in vehicles conforming to the standard, the NHTSA is aware of the issue and will consider further rulemaking on the subject if subsequent data reveals a problem.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 215, Exterior Protection, in § 571.21 of Title 49, Code of Federal Regulations, is amended. . . . Effective date: September 1, 1972 and September 1, 1973. The amendments to the protective criteria are effective September 1, 1972. The amendments to S5.2, S7.2.5, and Figures 1 and 2 are effective September 1, 1973.

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Issued on June 15, 1971.

Douglas W. Toms  
Acting Administrator

**36 F.R. 11852**  
**June 22, 1971**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 215

### Exterior Protection

(Dockets No. 1-9 and 1-10, Notice 7)

The purpose of this notice is to amend Federal Motor Vehicle Safety Standard No. 215, in § 571.21 of Title 49, Code of Federal Regulations. The amendments are based on a review of all materials heretofore submitted to the docket, including a petition for reconsideration by the Japanese Automobile Manufacturers Association (JAMA). They also constitute action on the notice of proposed rulemaking of June 22, 1971 (36 F.R. 11868).

As published June 22, 1971, (36 F.R. 11852), Standard No. 215 became effective in two phases. The first phase, beginning September 1, 1972, requires a passenger car to meet certain protective criteria in barrier impacts at 5 mph in the front and 2½ mph in the rear. The second phase, effective September 1, 1973, required a car to meet the protective criteria during and after an additional series of impacts with a weighted pendulum, at 5 mph in the front, 4 mph in the rear and 3 mph on the vehicle corners.

Simultaneously with the publication of the standard on June 22, the NHTSA proposed amendments in the second phase of the requirements that would increase the protection required by the standard (36 F.R. 11868). The velocities in rear impacts were to be raised to 5-mph for both barrier and pendulum testing, the vehicle's engine was to be running during a barrier impact, and the list of protective criteria was to be enlarged to include a general prohibition against damage that adversely affects any aspect of performance that relates to motor vehicle safety.

The petition for reconsideration by JAMA requested a one year delay in the 5-mph front and 4-mph rear pendulum impact requirements contained in the June 22 rule. The NHTSA has concluded that a uniform delay in the pen-

dulum requirements is not justified, in that for the majority of vehicles the cost of improved protective systems in 1973 is outweighed by their benefits. The JAMA petition is therefore denied.

With respect to the amendments proposed in the notice of June 22, a number of comments objected to the proposed increase in the velocity of rear barrier impacts for the reason that it would require additional time for compliance and that it would increase the cost of the protective system without corresponding benefits to the consumer. On review, the NHTSA has concluded that the benefits of 5-mph rear bumper protection will outweigh the costs involved. Basic 5-mph barrier-impact protection can be provided with a variety of available devices and designs, which do not themselves generally require extensive vehicle sheet-metal changes. The requirement of meeting the damage criteria in a 5-mph impact, front and rear, is therefore adopted, effective September 1, 1973.

The notice of June 22, 1971, also proposed to increase the speed of the pendulum test device in rear impacts to 5-mph, effective September 1, 1973. Several comments raised lead time objections. Upon review of the information concerning tooling costs and other costs associated with a 5-mph rear pendulum test in 1973, the NHTSA has concluded that for the majority of vehicles the benefits to the public outweigh any incremental cost associated with the 1973 effective date, and September 1, 1973, is established as the effective date for most vehicles.

The NHTSA has determined, however, that with respect to certain vehicles, the detailed configurational requirements imposed by the pendulum tests cause severe leadtime problems. The

vehicles having the greatest difficulties are concentrated in the smaller classes, particularly small convertibles, hardtops, and sports-type cars. It has been determined that if these vehicles were forced to comply with the pendulum tests by the September 1, 1973 date, a substantial disruption of the manufacturers' production and tooling schedules would result, with extremely large cost penalties. In view of the adverse effect that this would probably have both on manufacturers' other safety-related development programs, and on consumer costs, a one-year delay in the pendulum test requirements with respect to the limited class of vehicles most severely affected has been found to be in the public interest. An exception has therefore been made in the application of the pendulum test requirements to passenger cars with wheel base of 115 inches or less, if they are convertibles, vehicles with no back seat, or "hardtops" (vehicles with no "B pillar" above the bottom of the window opening). These cars must meet the requirement one year later, by September 1, 1974. This exception does not affect the barrier crash test requirements, which go into effect as proposed with respect to all passenger cars.

In response to repeated requests from manufacturers to alleviate the retooling and restyling problems associated with corner impacts at heights below 20 inches, the NHTSA has determined that a two year delay in the implementation of S7.2.2, to September 1, 1975, would allow for more economical changeover and amends the standard accordingly. The requirement for corner impacts at 20 inches (S7.2.1) remains effective September 1, 1973, and will provide a significant level of protection for the period before the effective date of S7.2.2.

The new condition regarding engine operation caused some uncertainty among the commenters as to whether the engine must remain running for any length of time after initial contact with the barrier. Temporary engine stalling at low speeds is not considered a major safety problem, nor would it alone constitute damage within the meaning of the standard. If the engine cannot be restarted, of course, some damage would be indicated, and the vehicle would fail to conform to the protective criterion proposed by the June 22 notice. To clarify this point, the NHTSA has

decided to amend the test condition to provide that the engine is operating "at the onset of a barrier impact."

The proposed addition to the protective criteria was criticized for what was said to be a lack of objectivity, in that it does not identify the aspects of performance relating to motor vehicle safety and does not specify the manner in which they may be adversely affected. As an alternative, it was suggested that the NHTSA list the specific systems that must remain fully operative after the vehicle has been tested. This suggestion has merit, in that it would eliminate uncertainty as to which systems must be examined for damage after the tests have been performed. The vehicle propulsion, suspension, steering, and braking systems have been identified in this regard.

The suggestion that the particular prohibited effects on given systems be specified has not, however, been adopted. It is impracticable, and probably impossible, to specify in a standard all foreseeable types of damage or impairment that could occur to a complex system such as steering or front suspension. Any motor vehicle must, on the other hand, be designed so as to withstand without damage the types and degrees of shocks and stresses that it will encounter in normal road use (aside from normal wear that occurs with extended use, which is not at issue here.) The NHTSA has therefore found it reasonable to require manufacturers to design their vehicles, including the front and rear bumper systems, in such a manner that specified safety-related systems suffer no damage, remain in proper adjustment, and continue to operate in the normal manner.

One clarifying amendment has been adopted as a result of comments on the requirement of S5.3.1 that the vehicle "shall comply with the applicable visibility requirements of section S4.3.1.1 of Motor Vehicle Safety Standard No. 108." Ford suggested that the quoted language might not cover the appropriate aspects of lighting performance, and therefore requested a reference to Table III of Standard No. 108. Upon review of the question, the NHTSA agrees that the comprehensive nature of S5.3.1 should be more strongly indicated, but finds that the omis-

sion of some categories of lights from Table III make it an inadequate reference. Instead, it has been decided to strike the limiting reference to section S4.3.1.1 of Standard No. 108 and to refer broadly to the "applicable requirements of Motor Vehicle Safety Standard No. 108." Use of this more general phrase makes the reference to the headlamp adjustment requirements unnecessary and that sequence is accordingly deleted.

In a separate petition for rulemaking, American Motors has requested an amendment to permit the removal during pendulum tests, of "bumper protective strips" made of resilient material with specified characteristics. Although the NHTSA recognizes that resilient materials may be used to advantage on automobile bumpers, it regards the June 22 amendment of the impact

ridge as the most satisfactory means of permitting such materials. By permitting removal of such materials during testing the standard would no longer effectively control the contour of the vehicle's bumper and its interaction with other vehicles during low speed impacts. The petition is therefore denied.

By reason of the foregoing, Motor Vehicle Safety Standard No. 215, Exterior Protection, is amended. . . .

*Effective date:* September 1, 1972, except as otherwise noted in S5.2.

Issued on October 18, 1971.

Charles H. Hartman  
Acting Administrator

**36 F.R. 20369**  
**October 21, 1971**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 215

### Exterior Protection

(Docket No. 1-9 and 1-10; Notice 8)

The purpose of this notice is to respond to petitions requesting reconsideration of certain amendments to Federal Motor Vehicle Safety Standard No. 215, *Exterior Protection*, 49 CFR § 571.215, issued on October 18, 1971 (36 F.R. 20369, October 21, 1971). After issuance of the amendments, petitions were filed pursuant to 49 CFR 553.35 by American Motors, Ford, General Motors, and Chrysler. The petitions are granted in part and denied in part.

Each of the petitioners objected to the amendment of section S5.3.1. The section had formerly provided that, after impact, the vehicle's lamps and reflectors had to meet the visibility requirements of S4.3.1.1 of the Standard No. 108. Upon closer review of S5.3.1, the NHTSA concluded that the breadth of the protection that the section was intended to require might not be adequately conveyed by referring only to Standard No. 108's visibility requirements. It was therefore decided to broaden the reference to Standard No. 108, to refer to "the applicable requirements" of that standard.

The broadening of the reference to Standard No. 108 appears to have had a greater impact on manufacturers than was expected. After review of the petitions, the NHTSA has concluded that opportunity should be given for additional comment on the subject of lighting. The language of S5.3.1 is therefore changed to its original form. In a notice of proposed rulemaking published today in the *Federal Register* (36 F.R. 23831) amendments are proposed to S5.1 and S5.3.1 that will require vehicles manufactured after September 1, 1973, to meet the photometric requirements of Standard No. 108, as well as the visibility requirements.

The Ford Motor Company stated that the requirement of S5.3.4 that "the vehicle's exhaust

system shall have no leaks or constrictions," would preclude the use of drip holes to remove condensation and, in addition, would not allow constrictions where tubing must be bent for proper routing. Standard No. 215 is not intended to prohibit such design features, but only to prohibit damage resulting from the impacts specified in the standard. Accordingly, design drip holes are not considered to be "leaks," and "constrictions" does not include the normal design configuration of the exhaust system. The amendment requested by Ford is considered unnecessary, and the petition is therefore denied.

General Motors objected to the requirement of S5.3.5 that specified vehicle systems shall "suffer no damage." The company stated that the phrase was not objective and was therefore inappropriate for a standard. On reconsideration, the NHTSA has concluded that the other protective requirements of S5.3.1 afford adequate protection and that the benefits resulting from the no-damage requirement are not significant enough to justify its continuance as part of the standard. S5.3.5 is therefore amended by deleting the phrase "suffer no damage."

In its petition, General Motors repeated its objection to the requirement for corner impacts at heights below 20 inches (S7.2.2). As in its previous comments on the subject, the company requested an amendment to permit contact with Plane A of the test device in such impacts. The NHTSA has previously rejected this request, and on reconsideration finds no sufficient cause to alter its position. A primary effect of requiring impacts below 20 inches is to establish a fairly broad and non-hostile surface at the vehicle's corners. The shape of the impact ridge is such that if the no-contact requirement applied only

at the 20-inch height, the standard would not prevent the manufacture of bumpers with blade type corners. The NHTSA considers that the extension of time previously granted for conformity with S7.2.2 (to September 1, 1975) is adequate for the redesign of sheet metal, if this is necessary, and declines to amend the standard further with respect to corner impacts.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 215, Exterior Protection, § 571.215 of Title 49, Code of Federal Regulations, is amended. . . .

The foregoing amendments are issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407 and the delegation of authority at 49 CFR 1.51.

Issued on December 9, 1971.

Charles H. Hartman  
Acting Administrator

**36 F.R. 23802**  
**December 15, 1971**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 215

### Exterior Protection

(Docket No. 1-9; Notice 11)

The purpose of this notice is (a) to amend Motor Vehicle Safety Standard No. 215, *Exterior Protection*, 49 CFR § 571.215, to permit the removal of bumper hitches during the required impacts; (b) to amend the headlamp adjustment requirements of S5.3.1 of the standard; and (c) to terminate rulemaking with respect to other amendments proposed to S5.3.1 of the standard by notice of December 15, 1971 (36 F.R. 23831).

The amendment to permit removal of trailer hitches was proposed on January 22, 1972 (37 F.R. 1059) in response to a petition for rulemaking by General Motors, who stated that factory installation of trailer hitches would have to be discontinued if their removal were not permitted during testing. In proposing the amendment, the agency noted that if factory installation were to cease, as appeared likely, the effect would probably be to increase the number of hitches installed after purchase.

Two comments expressed reservations about the proposal. The Automobile Club of Southern California expressed concern about the effects of the trailer hitch on the fuel tank in rear end collisions. The Center for Auto Safety stated that the proper functioning of a trailer hitch is essential for safe towing and that the hitch should therefore be regulated in the same manner as the other safety systems specified in the standard. Even if the standard were to apply to hitches, however, the applicable requirement would be the non-contact requirement of S5.3.6, and it is not at all certain that compliance with this requirement would produce a superior trailer hitch. The discontinuance of factory installations would probably not improve the situation in any case. The improvements in trailer hitches which the Center and the Automobile Club seek would thus appear to lie outside the scope of Standard No.

215. The proposed amendment is therefore being adopted as proposed.

In response to the proposal, a question has been raised concerning the intent of the requirement that "the aim of each headlamp shall be adjustable in accordance with the applicable requirements of Standard No. 108". General Motors stated that the reference should be more specific and suggested a reference to Table 1 of SAE Recommended Practice J599b, *Lighting Inspection Code*. American Motors stated that it considers two of the SAE Standards subreferenced by Standard No. 108—SAE J579a and J580a—to be based entirely on laboratory bench tests and not upon on-vehicle tests.

This agency disagrees with American Motors, and considers J580a to be an on-vehicle test as well as a laboratory bench test. It has concluded, however, that J580a and the other SAE Standards referenced by Standard No. 108 are less suited to the purposes of Standard No. 215 than are the provisions of the lighting inspection procedure of SAE J599b. Standard No. 215 is intended to protect the headlamps so that they can be adjusted to throw a satisfactory pattern of light. Accordingly, it has been decided to amend the last sentence of S5.3.1 of Standard No. 215 to refer to the table in SAE Recommended Practice J599b that sets out the aiming requirements for headlamps.

The notice of proposed rulemaking, published on December 15, 1971, proposed to require the lights to be operable after the test impacts and to require them to meet the photometric requirements of Standard No. 108. Upon review of the comments and further evaluation of the potential effects of the proposed requirements, it has been concluded that neither is likely to produce a

significant upgrading of vehicle protection, and that their costs would far outweigh their benefits.

The preamble to the notice indicated that the intent of the operability requirement was to prevent filament breakage. Most of the comments pointed out that the SAE requirements incorporated by Standard No. 108 do not prohibit filament failure during endurance tests, and in fact expressly permit replacement in the event of failure. This is consistent with the prevailing treatment of bulb replacement as a part of routine maintenance. In light of this fact, and of the small amount of time and energy involved in replacing a bulb, it has been decided not to adopt the proposed requirement that the lamps (*i.e.*, the bulbs) be operable.

The photometric requirements of Standard No. 108 are those of several SAE lighting standards. Each of these standards consists of a series of laboratory test procedures. On review of the comments, which are unanimous in their claim that the SAE laboratory procedures are difficult to adapt to the circumstances of Standard No. 215 and that they go beyond the stated purpose of the standard, it has been decided not to adopt

the photometric requirements. Thus, the protective criteria with respect to lighting will continue to be visibility, headlamp aiming, and freedom from cracks.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 215, Exterior Protection, 49 CFR § 571.215, is amended . . . .

Effective date: September 1, 1972.

Because this amendment modifies an existing rule in a manner that imposes no additional substantive requirements, it is found for good cause shown that an effective date less than 180 days from the date of issuance is in the public interest.

This notice is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407, and the delegation of authority at 49 CFR 1.51.

Issued on August 14, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 16803**  
**August 19, 1972**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 215

### Exterior Protection

(Docket No. 74-11; Notice 3)

The purpose of this notice is to amend Standard No. 215, *Exterior Protection*, to regulate the performance of pressure vessels used in exterior protection systems.

In a notice published September 1, 1972 (37 F.R. 17858), it was proposed that pressure vessels be required to absorb impact energy by the accumulation of air or hydraulic pressure to withstand the specified test impacts without releasing pressure to the atmosphere. The objective of this proposal was twofold: to insure consistency in the regulation of pressure devices on motor vehicles by preempting State and local regulations, and to establish a criterion that would represent a safe level of performance for such devices.

The National Committee on Uniform Traffic Laws and Ordinances disagreed with what it saw to be a policy of regulation for the purpose of preempting State laws and regulations. Although the NHTSA is of the opinion that regulation for the purpose of preemption is sometimes necessary, the necessitating circumstances do not often arise. In the present case, however, it appeared the development of pressure vessels to meet Standard No. 215 was inhibited by the existence of State and local regulations, most of which had been adopted for other purposes and only incidentally affected vehicles. It further appeared that the test procedures of the standard afforded a good means of testing the safety of the devices and that the preemption of State and local regulations would therefore not lower the level of public safety. Under these circumstances preemption is considered appropriate.

The principal objection to the proposal was that it required a higher level of performance

than necessary to accomplish the intended safety goal of protecting bystanders from injury. It was pointed out in the comments that the proposed prohibition against pressure loss could be construed to bar the release of pressure by safety release valves or by other means that do not present a hazard. In addition, Rolls Royce noted that in situations where pressure vessels are relied upon as an aspect of a vehicle's exterior protection system, any substantial pressure loss would result in a failure to satisfy the damage criteria specified for the multiple test impacts. The NHTSA finds merit in these observations and has concluded that regulation of pressure vessels should be limited to the type of destructive failure that could endanger bystanders. It has been determined that the desired degree of safety can be achieved by preventing loss of pressure during testing when it is accompanied by separation of fragments from the vessel, since it is these fragments that pose the potential safety hazard.

The proposed amendment has been altered in another, less significant, respect by adding the phrase "in an exterior protection system" as part of the description of the device regulated by the section. Several comments expressed concern that shock absorbers could have been included within the proposed description. The quoted phrase has been added to make it clear that shock absorbers and similar devices are not regulated by the pressure vessel performance criteria. A further suggestion concerning the substitution of the term "pressure vessel" for "device" has also been adopted.

Section S5.2 is amended to reflect the addition of the new requirement in S5.3.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 215, *Exterior Protection* (49 CFR 571.215), is amended . . . .

Effective date: March 1, 1975.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on August 7, 1974.

James B. Gregory  
Administrator

**39 F.R. 29369**  
**August 15, 1974**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 215

(Docket No. 74-11; Notice 5)

The purpose of this notice is to amend Standard No. 215, *Exterior Protection*, by extending the current exception of certain vehicles with wheelbases of 115 inches or less from the pendulum impact requirements until November 1, 1974.

Responding to a petition submitted by General Motors, the NHTSA proposed a brief delay in the application of the pendulum impact requirements to convertibles, vehicles with no B-pillars, and vehicles with no rear seat having wheelbases of 115 inches or less (39 F.R. 29600, August 16, 1974). In its petition General Motors explained that a work stoppage at its St. Louis, Missouri manufacturing plant appeared certain to delay the build-out of its 1974 model Corvettes beyond the current August 31, 1974 termination of the 115-inch wheelbase exception. They pointed out that denial of the requested extension would involve the scrapping of some scarce materials, such as polyvinyl chloride and other petrochemicals, which are not capable of modification for use in vehicles subject to the pendulum requirements.

No comments were received in opposition to the proposal. The NHTSA has determined that the General Motors request should be granted, having concluded that the extension will have no materially adverse effect on motor vehicle safety and will prevent waste of scarce materials which have already been committed for 1974 Corvette model production.

In consideration of the foregoing S5.2.2 of Standard No. 215 (49 CFR 571.215) is amended . . . .

Effective date: September 1, 1974.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718, (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on August 29, 1974.

James B. Gregory  
Administrator

**39 F.R. 31641**  
**August 30, 1974**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 215

### Exterior Protection

(Docket No. 74-11; Notice 10)

The purpose of this notice is to amend Standard No. 215, *Exterior Protection*, 49 CFR 571.215, to reduce the number of longitudinal pendulum impacts and to delay for one year until September 1, 1976, the application of the low-corner impact requirements to vehicles with wheelbases exceeding 120 inches.

On March 12, 1975, the National Highway Traffic Safety Administration (NHTSA) published a notice (40 F.R. 11598) proposing a reduction in the number of front and rear longitudinal pendulum impacts from six to two. The notice also proposed a 1-year postponement of the September 1, 1975, effective date of the low-corner impact requirements as they apply to "full-sized" vehicles (with wheelbases in excess of 120 inches), in order to provide Chrysler with necessary relief due to current serious financial difficulties.

The March 12, 1975, notice also addressed the proposed Part 581 bumper standard by revising the damage criteria and proposing new effective dates for implementation of the Title I, Motor Vehicle Information and Cost Savings Act (Pub. L. 92-513) damageability standard. Since the Part 581 provisions involve complex issues relating to permissible cosmetic damage and have been the focus of much detailed comment, the agency needs more time to formulate its next rulemaking step in this area. The two proposed revisions of Standard 215, however, have been examined in light of the comments and final action on them can now be taken. The imminence of the proposed effective dates of these two amendments makes immediate action necessary. Therefore, the proposed amendments to Standard 215 are being addressed in this notice, while the

proposed amendments to Part 581 remain under consideration for action in a later notice.

Although most commenters supported the proposed reduction in the number of longitudinal impacts, Ford Motor Company and State Farm Mutual Insurance Company raised some objections to the move. Ford, who had submitted a petition to lower the number of pendulum impacts to one front and one rear, argued that the NHTSA's proposal to require two front and rear impacts was "overkill", not supported by accident data. On the other side, State Farm expressed concern that the proposed number of pendulum impacts would not assure an adequate level of bumper performance.

The NHTSA finds both Ford's and State Farm's arguments without merit. NHTSA studies show that a passenger car is involved in an average of slightly more than two low-speed bumper-involved accidents in its 10-year life. In light of this, a bumper's capability to provide adequate protection would not be assured by one longitudinal impact. Based on these accident statistics, each bumper should be able to withstand two longitudinal pendulum impacts in order to ensure a sufficient level of bumper performance.

The proposal to delay for 1 year the implementation of the low-corner impact requirements as they apply to vehicles with wheelbases over 120 inches met with criticism from many commenters. The main objections centered on the alleged unfairness of relief being limited to "full-sized" vehicles. It was urged that the 1-year suspension be made applicable to all vehicles or that the requirement be deleted altogether.

The NHTSA does not accept these arguments. The proposal to delay the low-corner impact re-

quirements until September 1, 1976, for vehicles with wheelbases in excess of 120 inches was based solely on an intent to provide Chrysler with some relief from the serious financial difficulties it is now experiencing. As stated in the preamble to the March 12, 1975, notice, the redesigning necessary for Chrysler to bring its "full-sized" vehicles into compliance with the low-corner requirement by September 1, 1975, would add significantly to its financial burdens.

In past notices the NHTSA has supported its position that the low-corner impact requirements assure protection from certain types of low-speed collisions which are frequently encountered. For this reason, the requests to delete permanently the low-corner impact requirements are rejected. In addition, the requests that the 1-year delay be applied to all vehicle types is rejected, since the

need for financial relief expressed by Chrysler does not support an overall suspension of the provision. To satisfy Chrysler's needs, only "full-sized" cars need be affected.

In consideration of the foregoing, S5.2.1 and S7.1 of Standard No. 215, *Exterior Protection* (49 CFR 571.215) are amended. . . .

*Effective date:* May 13, 1975.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51).

Issued May 7, 1975.

James B. Gregory  
Administrator

**40 F.R. 20823**  
**May 13, 1975**

## MOTOR VEHICLE SAFETY STANDARD NO. 215

### Exterior Protection—Passenger Cars

(Docket Nos. 1-9 and 1-10; Notice No. 4)

**S1. Scope.** This standard establishes requirements for the impact resistance and the configuration of front and rear vehicle surfaces.

**S2. Purpose.** The purpose of this standard is to prevent low-speed collisions from impairing the safe operation of vehicle systems, and to reduce the frequency of override or underride in higher speed collisions.

**S3. Application.** This standard applies to passenger cars.

**S4. Definition.** All terms defined in the Act and the rules and standards issued under its authority are used as defined therein.

#### **S5. Requirements.**

##### **S5.1 Vehicles manufactured on or after September 1, 1972.**

Each vehicle manufactured on or after September 1, 1972, shall meet the protective criteria of S5.3.1 through S5.3.4 when it impacts a fixed collision barrier that is perpendicular to the line of travel of the vehicle, while traveling longitudinally forward at 5 mph and while traveling longitudinally rearward at 2½ mph, under the conditions of S6.1.

##### **S5.2 Vehicles manufactured on or after September 1, 1973.**

【Except as provided in S5.2.1 and S5.2.2, each vehicle manufactured on or after September 1, 1973, shall meet the protective criteria of S5.3.1 through S5.3.7 during and after impacts by a pendulum-type test device in accordance with the procedures of S7.1 and S7.2 followed by impacts into a fixed collision barrier that is perpendicular to the line of travel of the vehicle, while traveling longitudinally forward at 5 mph and while traveling longitudinally rearward at 5 mph under the conditions of S6. (39 F.R. 29369—August 15, 1974. Effective: 3/1/75)】

**S5.2.1** 【The corner-impact procedure of S7.2.2 shall not apply to any vehicle with a wheelbase exceeding 120 inches manufactured from September 1, 1973 to August 31, 1976. (40 F.R. 20823—May 13, 1975. Effective: 5/13/75)】

**S5.2.2** 【The fixed collision barrier impact requirements of S5.2 shall apply, but the pendulum impact requirements of S5.2 shall not apply to each vehicle manufactured from September 1, 1973 to October 31, 1974, that has a wheelbase of 115 inches or less and that either—

(a) Has a convertible top;

(b) Has no roof support structure between the A-pillar and the rear roof support structure; or

(c) Has no designated seating position behind the front designated seating positions.

(39 F.R. 31641—August 30, 1974. Effective: 9/1/74)】

#### **S5.3 Protective criteria.**

**S5.3.1** 【Each lamp or reflective device, except license plate lamps, shall be free of cracks and shall comply with the applicable visibility requirements of S4.3.1.1 of Standard No. 108 (§ 571.108 of this part). The aim of each headlamp shall be adjustable to within the beam aim inspection limits specified in Table 2 of SAE Recommended Practice J599b, July 1970, measured with a mechanical aimer conforming to the requirements of SAE Standard J602a, July 1970. (37 F.R. 16803—August 19, 1972. Effective: 9/1/72)】

**S5.3.2** The vehicle's hood, trunk, and doors shall operate in the normal manner.

**S5.3.3** The vehicle's fuel and cooling systems shall have no leaks or constricted fluid passages and all sealing devices and caps shall operate in the normal manner.

**S5.3.4** The vehicle's exhaust system shall have no leaks or constrictions.

**S5.3.5** [The vehicle's propulsion, suspension, steering, and braking systems shall remain in adjustment and shall operate in the normal manner. (36 F.R. 23802—December 15, 1971. Effective: September 1, 1972)]\*

**S5.3.6** The vehicle shall not touch the test device except on the impact ridge shown in Figures 1 and 2. (36 F.R. 20369—October 21, 1971. Effective: 9/1/72, except as noted in S5.2)]

**[S5.3.7** A pressure vessel used to absorb impact energy in an exterior protection system by the accumulation of gas pressure or hydraulic pressure shall not suffer loss of gas or fluid accompanied by separation of fragments from the vessel. (39 F.R. 29369—August 15, 1974. Effective: 3/1/75)]

**S6. Conditions.** The vehicle shall meet the requirements of S5 under the following conditions.

**S6.1 General.**

**S6.1.1** The vehicle is at unloaded vehicle weight.

**S6.1.2** The front wheels are parallel to the vehicle's longitudinal centerline.

**S6.1.3** Tires are inflated to the vehicle manufacturer's recommended pressure for the specified loading condition.

**S6.1.4** Brakes are disengaged and the transmission is in neutral.

**[S6.1.5** Trailer hitches are removed from the vehicle. (37 F.R. 16803—August 19, 1972. Effective: 9/1/72)]

**S6.2 Pendulum test conditions.** The following conditions apply to the pendulum test procedures of S7.1 and S7.2.

**S6.2.1** The test device consists of a block with one side contoured as specified in Figure 1 and Figure 2 with the impact ridge made of hardened steel.

**S6.2.2** With plane A vertical, the impact line shown in Figures 1 and 2 is horizontal at the same height as the test device's center of percussion.

\*S5.2 through S5.3.6 were amended October 21, 1971. S5.3.1 and S5.3.5 were subsequently amended 36 F.R. 23802—December 15, 1971

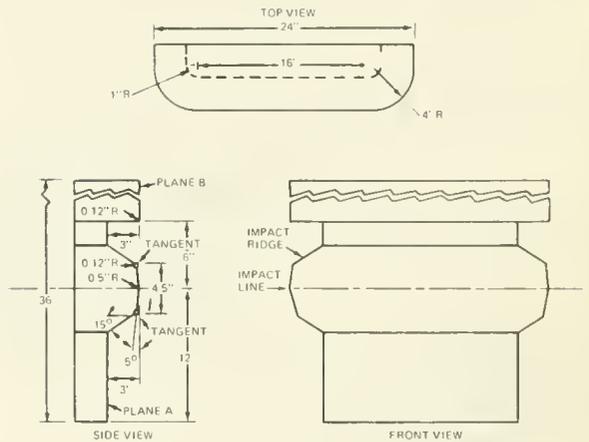


FIGURE 1

**S6.2.3** The effective impacting mass of the test device is equal to the mass of the tested vehicle.

**S6.2.4** When impacted by the test device, the vehicle is at rest on a level, rigid concrete surface.

**[S6.3 Barrier test condition.** At the onset of a barrier impact, the vehicle's engine is operating at idling speed. (36 F.R. 20369—October 21, 1971. Effective: 9/1/72)]

**S7. Test procedures.**

**S7.1 Longitudinal impact test procedures.** [Impact the vehicle's front surface and its rear surface two times each with the impact line at any height between 20 inches and 16 inches, in accordance with the following procedure. (40 F.R. 20823—May 13, 1975. Effective date: 5/13/75)]

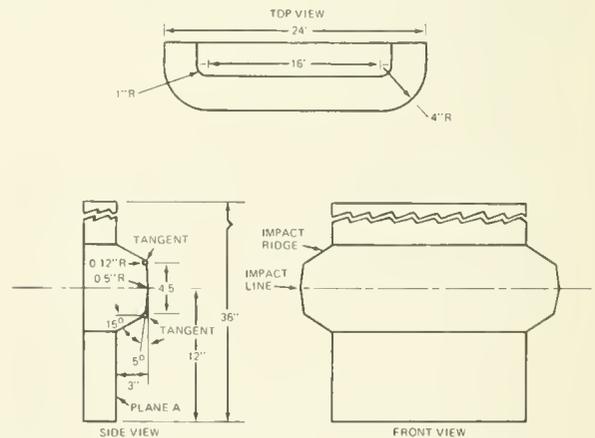


FIGURE 2

**57.1.1** For impacts at a height of 20 inches, place the test device shown in Figure 1 so that plane A is vertical and the impact line is horizontal at the specified height.

**57.1.2** For impacts at a height between 20 inches and 16 inches, place the test device shown in figure 2 so that plane A is vertical and the impact line is horizontal at a height within the range.

**57.1.3** For each impact, position the test device so that the impact line is at least 2 inches apart in vertical direction from its position in any prior impact, unless the midpoint of the impact line with respect to the vehicle is to be more than 12 inches apart laterally from its position in any prior impact.

**57.1.4** For each impact, align the vehicle so that it touches, but does not move, the test device, with the vehicle's longitudinal centerline perpendicular to the plane that includes plane A of the test device and with the test device inboard of the vehicle corner test positions specified in S7.2.

**[57.1.5** Move the test device away from the vehicle, then release it so that plane A remains vertical from release until the onset of rebound, and the arc described by any point on the impact line is constant, with a radius of not less than 11 feet, and lies in a plane parallel to the vertical plane through the vehicle's longitudinal centerline. (36 F.R. 8734—May 12, 1971)**]**

**57.1.6** **[**Impact the vehicle at 5 mph. (36 F.R. 20369—October 21, 1971. Effective: 9/1/72)**]**

**57.1.7** Perform the impacts at intervals of not less than 30 minutes.

**57.2 Corner impact test procedure.** Impact a front corner and a rear corner of the vehicle once each with the impact line at a height of 20 inches and impact the other front corner and the other rear corner once each with the impact line at any height between 20 inches and 16 inches in accordance with the following procedure.

**57.2.1** For an impact at a height of 20 inches, place the test device shown in figure 1 so that plane A is vertical and the impact line is horizontal at the specified height.

**57.2.2** For an impact at a height between 20 inches and 16 inches, place the test device shown in figure 2 so that plane A is vertical and the impact line is horizontal at a height within the range.

**57.2.3** Align the vehicle so that a vehicle corner touches, but does not move, the lateral center of the test device with plane A of the test device forming an angle of 60 degrees with a vertical longitudinal plane.

**57.2.4** Move the test device away from the vehicle, then release it so that plane A remains vertical from release until the onset of rebound, and the arc described by any point on the impact line is constant, with a radius of not less than 11 feet, and lies in a vertical plane at an angle of 30° to the vertical plane through the vehicle's longitudinal centerline.

**57.2.5** Impact each corner at 3 mph.

**36 F.R. 7218**  
**April 16, 1971**

**36 F.R. 8734**  
**May 12, 1971**



## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 216

### Roof Crush Resistance—Passenger Cars

(Docket No. 2-6; Notice 5)

The purpose of this amendment to Part 571 of Title 49, Code of Federal Regulations, is to add a new Motor Vehicle Safety Standard 216, (49 CFR § 571.216) that sets minimum strength requirements for a passenger car roof to reduce the likelihood of roof collapse in a rollover accident. The standard provides an alternative to conformity with the rollover test of Standard 208.

A notice of proposed rulemaking on this subject was issued on January 6, 1971 (36 F.R. 166). As noted in that proposal, the strength of a vehicle roof affects the integrity of the passenger compartment and the safety of the occupants. A few comments suggested that there is no significant causal relationship between roof deformation and occupant injuries in rollover accidents. However, available data have shown that for non-ejected front seat occupants in rollover accidents, serious injuries are more frequent when the roof collapses.

The roof crush standard will provide protection in rollover accidents by improving the integrity of the door, side window, and windshield retention areas. Preserving the overall structure of the vehicle in a crash decreases the likelihood of occupant ejection, reduces the hazard of occupant interior impacts, and enhances occupant egress after the accident. It has been determined, therefore, that improved roof strength will increase occupant protection in rollover accidents.

Standard 208 (49 CFR § 571.208), *Occupant Crash Protection*, also contains a rollover test requirement for vehicles that conform to the "first option" of providing complete passive protection. The new Standard 216 issued herewith

is intended as an alternative to the Standard 208 rollover test, such that manufacturers may conform to either requirement as they choose. Standard 208 is accordingly amended by this notice; the effect of the amendment, together with the new Standard 216, is as follows:

(1) From January 1, 1972, to August 14, 1973, a manufacturer may substitute Standard 216 for the rollover test requirement in the first option of Standard 208; Standard 216 has no mandatory application.

(2) From August 15, 1973, to August 14, 1977, Standard 216 is in effect as to all passenger cars except those conforming by passive means to the rollover test of Standard 208, but it may continue to be substituted for that rollover test.

(3) After August 15, 1977, Standard 216 will no longer be a substitute for the Standard 208 rollover test. It is expected that as of that date Standard 216 will be revoked, at least with respect to its application to passenger cars.

A few comments stated that on some models the strength required in the A pillar could be produced only by designs that impair forward visibility. After review of strengthening options available to manufacturers, the Administration has concluded that a satisfactory increase in strength can be obtained without reducing visibility.

Some comments suggested that the crush limitation be based on the interior deflection of the test vehicle rather than the proposed external criterion. After comparison of the two methods, it has been concluded that a test based on interior deflection would produce results that are significantly less uniform and more difficult to measure, and therefore the requirement based on

external movement of the test block has been retained.

Several changes in detail have been made, however, in the test procedure. A number of comments stated that the surface area of the proposed test device was too small, that the 10-degree pitch angle was too severe, and that the 5 inches of padded test device displacement was not enough to measure the overall roof strength. Later data available after the issuance of the NPRM (Notice 4) substantiated these comments. Accordingly, the dimensions of the test block have been changed from 12 inches square to 30 inches by 72 inches, the face padding on the block has been eliminated, and the pitch angle has been changed from 10 degrees to 5 degrees.

Several manufacturers asked that convertibles be exempted from the standard, stating that it was impracticable for those vehicles to be brought into compliance. The Administration has determined that compliance with the standard would pose extreme difficulties for many convertible models. Accordingly, manufacturers of convertibles need not comply with the standard; however, until August 15, 1977, they may comply with the standard as an alternative to conformity with the rollover test of Standard 208.

A few comments objected to the optional 5,000-pound ceiling to the requirement that the roof have a peak resistance of  $1\frac{1}{2}$  times the unloaded vehicle weight. Such objections have some merit, if the energy to be dissipated during a rollover accident must be absorbed entirely by the crash vehicle. In the typical rollover accident, however, in which the vehicle rolls onto the road shoulder, significant amounts of energy are absorbed by the ground. This is particularly true in heavier vehicles. Some of the heavier vehicles, moreover, would require extensive redesign, at a considerably greater cost penalty than in the case of lighter vehicles, to meet a strength requirement of  $1\frac{1}{2}$  times their weight. At the same time, heavier vehicles generally have a lower rollover tendency than do lighter vehicles. On the basis of these factors, it has been determined that an upper limit of 5,000 pounds on

the strength requirement is justified, and it has been retained.

It was requested that the requirement of mounting the chassis horizontally be deleted. It has been determined that the horizontal mounting position contributes to the repeatability of the test procedure and the requirement is therefore retained.

The required loading rate has been clarified in light of the comments. The requirement has been changed from a rate not to exceed 200 pounds per second to a loading device travel rate not exceeding one-half inch per second, with completion of the test within 120 seconds.

A number of manufacturers requested that repetition of the test on the opposite front corner of the roof be deleted. It has been determined that, as long as it is clear that both the left and right front portions of the vehicle's roof structure must be capable of meeting the requirements, it is not necessary that a given vehicle be capable of sustaining successive force applications at the two different locations. The second test is accordingly deleted.

*Effective date:* August 15, 1973. After evaluation of the comments and other information, it has been determined that the structural changes required by the standard will be such that many manufacturers would be unable to meet the requirements if the January 1, 1973 effective date were retained. It has therefore been found, for good cause shown, that an effective date more than one year after issuance is in the public interest. On or after January 1, 1972, however, a manufacturer may substitute compliance with this standard for compliance with the rollover test requirement of Standard 208.

In consideration of the above, the following changes are made in Part 571 of Title 49, Code of Federal Regulations:

1. Standard No. 208, 49 CFR § 571.208, is amended by adding the following sentence at the end of S5.3, *Rollover*: "However, vehicles manufactured before August 15, 1977, that conform to the requirements of Standard No. 216 (§ 571.216) need not conform to this rollover test requirement."

2. A new § 571.216, Standard No. 216 *Roof Crush Resistance*, is added. . . .

Issued on December 3, 1971.

Charles H. Hartman  
Acting Administrator

This rule is issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1407, and the delegation of authority at 49 CFR 1.51.

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**36 F.R. 23299**  
**December 8, 1971**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 216****Roof Crush Resistance****(Docket No. 69-7; Notice 29)**

The purpose of this notice is to postpone the effective date of the requirements of Standards No. 208, Occupant Crash Protection, and 216, Roof Crush Resistance, applicable to the upcoming model year, from August 15, 1973, to September 1, 1973.

The amendment of the effective date was proposed in a notice published July 17, 1973 (38 F.R. 19049), in response to a petition filed by Chrysler Corporation. Chrysler had stated that the build out of their 1973 models was in danger of running beyond the August 15 date, due to a variety of factors beyond the company's control. In proposing the postponement of the date, the NHTSA noted that the August 15 date had been chosen to coincide with the normal changeover date and that a delay would not appear to have any effect beyond allowing a slightly prolonged build-out.

The two comments submitted in response to the proposal were both favorable. The agency has not discovered any adverse consequences of a delay which would make it inadvisable, and has

therefore decided to postpone the effective date as proposed.

In light of the foregoing, 49 CFR 571.208, Standard No. 208, Occupant Crash Protection, is amended by changing the date of August 14, 1973, appearing in S4.1.1 to August 31, 1973, and by changing the date of August 15, 1973, appearing in S4.1.2 to September 1, 1973. The effective date of 49 CFR 571.216, Standard No. 216, Roof Crush Resistance, is changed from August 15, 1973, to September 1, 1973.

Because this amendment relieves a restriction and imposes no additional burden, an effective date of less than 30 days from the date of issuance is found to be in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on August 10, 1973.

James B. Gregory  
Administrator

**38 F.R. 21930**  
**August 14, 1973**



## MOTOR VEHICLE SAFETY STANDARD NO. 216

### ROOF CRUSH RESISTANCE—PASSENGER CARS

**S1. Scope.** This standard establishes strength requirements for the passenger compartment roof.

**S2. Purpose.** The purpose of this standard is to reduce deaths and injuries due to the crushing of the roof into the passenger compartment in rollover accidents.

**S3. Application.** This standard applies to passenger cars. However, it does not apply to vehicles that conform to the rollover test requirements (S5.3) of Standard 208 (§ 571.208) by means that require no action by vehicle occupants. It also does not apply to convertibles, except for optional compliance with the standard as an alternative to the rollover test requirements in S5.3 of Standard 208.

**S4. Requirements.** A test device as described in S5 shall not move more than 5 inches, measured in accordance with S6.4, when it is used to apply a force of  $1\frac{1}{2}$  times the unloaded vehicle weight of the vehicle of 5,000 pounds, whichever is less, to either side or the forward edge of a vehicle's roof in accordance with the procedures of S6. Both the left and right front portions of the vehicle's roof structure shall be capable of meeting the requirements, but a particular vehicle need not meet further requirements after being tested at one location.

**S5. Test Device.** The test device is a rigid unyielding block with its lower surface formed as a flat rectangle 30 inches  $\times$  72 inches.

**S6. Test Procedure.** Each vehicle shall be capable of meeting the requirements of S4 when tested in accordance with the following procedure.

**S6.1.** Place the sills or the chassis frame of the vehicle on a rigid horizontal surface, fix the vehicle rigidly in position, close all windows,

close and lock all doors, and secure any convertible top or removable roof structure in place over the passenger compartment.

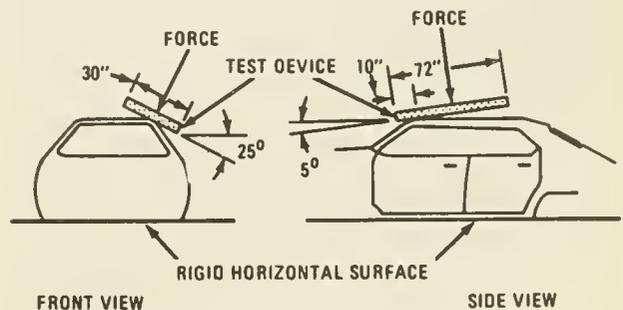
**S6.2.** Orient the test device as shown in Figure 1, so that—

(a) Its longitudinal axis is at a forward angle (side view) of  $5^\circ$  below the horizontal, and is parallel to the vertical plane through the vehicle's longitudinal centerline;

(b) Its lateral axis is at a lateral outboard angle, in the front view projection, of  $25^\circ$  below the horizontal;

(c) Its lower surface is tangent to the surface of the vehicle; and

(d) The initial contact point, or center of the initial contact area, is on the longitudinal centerline of the lower surface of the test device and 10 inches from the forwardmost point of that centerline.



TEST DEVICE LOCATION AND APPLICATION TO THE ROOF

Figure 1

**S6.3.** Apply force in a downward direction perpendicular to the lower surface of the test device at a rate of not more than one-half inch

Effective: September 1, 1973

per second until reaching a force of  $1\frac{1}{2}$  times the unloaded vehicle weight of the tested vehicle or 5,000 pounds, whichever is less. Complete the test within 120 seconds. Guide the test device so that throughout the test it moves, without rotation, in a straight line with its lower surface oriented as specified in S6.2(a) through S6.2(d).

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**S6.4** Measure the distance that the test device moves, *i.e.*, the distance between the original location of the lower surface of the test device and its location as the force level specified in S6.3 is reached.

**36 F.R. 23299**  
**December 8, 1971**

## MOTOR VEHICLE SAFETY STANDARD NO. 217

### Bus Window Retention and Release

(Docket No. 2-10; Notice 3)

The purpose of this amendment to § 571.21 of Title 49, Code of Federal Regulations, is to add a new motor vehicle safety standard that establishes minimum requirements for bus window retention and release to reduce the likelihood of passenger ejection in accidents and enhance passenger exit in emergencies.

A notice of proposed rulemaking on this subject was published on August 15, 1970 (35 F.R. 13025). The comments received in response to the notice have been considered in this issuance of a final rule.

For reasons of clarification, the requirements paragraph has been reorganized and the demonstration procedures paragraph has been replaced by a test conditions paragraph. Some of the specifications of the demonstration procedures paragraph are incorporated under the requirements paragraph, and the remainder are retained under the test conditions paragraph. With the exception of the changes discussed below, the reorganization does not affect the substance of the standard.

In altering the window retention requirements, the final rule lowers the force application limit, provides more precise glazing breakage and glazing yield limits, and exempts small windows. With respect to the emergency exit requirements, the standard permits devices other than push-out windows to be used for emergency exits, permits buses with a GVWR of 10,000 pounds or less to utilize devices other than emergency exits for emergency egress, and permits an alternate roof exit when the bus configuration precludes provision of a rear emergency exit. It also raises the force limits for release and extension of emergency exits, deletes the inertial load requirement for the release mechanism, and requires that emergency exit location markings be lo-

cated within each occupant space adjacent to an exit.

A few changes have been made in the diagram accompanying the standard. Figure 1, "Adjacent Designated Seating Position, Occupant Spaces, and Push-Out Window Relationship," has been deleted from the final rule because the relationship is sufficiently described in the text of the standard. Accordingly, Figures 2 and 3 have been renumbered as Figures 1 and 2, respectively. A new Figure 3, indicating access regions for emergency exits which do not have adjacent seats, has been added. For reasons of clarification, Figures 2a and 2b and Figures 3a and 3b in the proposed rule have been placed beside each other to form Figures 1 and 2 respectively.

The torque in Figures 2a and 2b of the proposed rule has been transferred to the text and has been explained to indicate that the force used to obtain the torque shall not be more than 20 pounds. In addition, the clearance specifications in Figures 1 and 2 have been clarified in the text to require that the lower edge of the force envelope shall be located 5 inches above the seat, or 2 inches above the armrest, if any, whichever is higher. In several instances, minor changes have been made in the labeling without altering the substance of the diagrams.

A number of comments sought changes in the window retention requirements. Two comments requested an exemption for intra-city buses because the probability of rollover accidents would be minimal in slow-speed operation. Urban transit buses are subjected to risks of rollover accidents within the city when they travel at moderate to high speed on intra-urban expressways, and should therefore be covered by the

standard. Accordingly, the request for this exemption is denied.

Several comments requested an exemption for small windows. Since there is little likelihood of passenger ejection or protrusion from window openings whose minimum surface dimension measured through the center of the area is less than eight inches, an exemption for windows of this size has been granted.

Two comments asked that the 2,000 pound force application limit in the window retention requirement be lowered. The data indicates that a 1,200-pound limit would be more compatible with the glazing strength. Accordingly, the 2,000-pound force application limit has been lowered to 1,200 pounds.

Several manufacturers stated that they encountered difficulties in ascertaining when the proposed head form penetration limit of the window retention requirement had been reached. After observation of window retention testing, the NHTSA has concluded that the penetration limit as specified in the notice of proposed rule-making is difficult to determine. For this reason the head form penetration limit has been rephrased in terms of the development of cracks in the glazing and the amount of depression of the glazing surface in relation to its original position.

A number of comments objected to the requirement that at least 75% of the glazing be retained in the window mounting during window retention testing. The NHTSA has determined that the intent of this requirement is already accomplished by the requirement that each window be retained during testing by its surrounding structure in a manner which would prevent passage of a 4-inch sphere, and the requirement is accordingly deleted from the final rule.

With respect to the emergency exit requirements, the standard permits devices other than push-out windows to be used for emergency exits. Upon review of the requirements, it has been determined that devices such as panels and doors which meet the emergency exit requirements would be as effective as push-out windows for emergency egress. Because the Administration has concluded that passenger egress is enhanced when several emergency exits are pro-

vided, the standard requires that in computing whether a bus meets the unobstructed openings area requirements, no emergency exit, regardless of its area, shall be credited with more than 520 square inches of the total area requirement.

A number of motor vehicle manufacturers sought exemption from the emergency exit requirements for smaller vehicles weighing 10,000 pounds or less GVWR, such as limousines and station wagons, which are designed to carry more than 10 persons and are therefore considered to be buses under NHTSA regulations (49 CFR 571.3). Such vehicles are usually provided with numerous doors and windows which provide sufficient unobstructed openings for emergency exit. Therefore the Administration has concluded that the configuration of these vehicles satisfies the intent of the standard with respect to provision of emergency exits, and they are exempted from the emergency exit openings requirements.

The emergency exit requirements have been changed to permit installation of an alternate roof exit when the bus configuration precludes provision of a rear exit, provided that the roof exit meets the release, extension, and identification requirements. The NHTSA has established this alternative in order to allow design flexibility while providing for emergency egress in rollover situations.

A number of comments expressed concern that the proposed maximum force level for release and extension of emergency exits in Figures 2a and b and 3a and b were too low to inhibit inadvertent operation by passengers and suggested that the required maximum force level be raised. After consideration of the goals of facilitating emergency egress and preserving the integrity of the passenger compartment under normal operation, it has been determined that the maximum force levels should be raised from 10 and 30 pounds to 20 and 60 pounds respectively.

One comment submitted the results of testing which indicated that the 30g inertial load requirement for the release mechanism was unnecessarily high. The testing also revealed that the engineering concepts upon which the inertial load requirement is based are not generally applied in the industry and that the requirement

would be impracticable. Moreover, an increase in maximum force levels for emergency exit operation in the rule should improve latch integrity. For these reasons, the requirement has been deleted.

The standard requires emergency exit location markings to be placed in certain occupant spaces because of a possible contradiction under the proposed standard between the requirement that the identification markings be located within 6 inches of the point of operation and the requirement that the markings be visible to a seated occupant. The NHTSA has concluded that emergency egress could be hindered if the passenger has difficulty in finding the marking, and that location of the marking outside of an occupant space containing an adjacent seat, which would be permitted under the proposed standard, could create this problem. At the same time it is desirable for the identification and instructions to be located near the point of release. Therefore the final rule requires that when a release mechanism is not located within an occupant space containing an adjacent seat, a label indicating the location of the nearest release mechanism shall be placed within that occupant space.

The temperature condition has been reworded to make it clear, in light of the explanation of

usage in § 571.4, that the vehicle must be capable of meeting the performance requirements at any temperature from 70° F. to 85° F.

*Effective date:* September 1, 1973. After evaluation of the comments and other information, it has been determined that the structural changes required by the standard will be such that many manufacturers will require an effective date of at least fifteen months after issuance. It is therefore found, for good cause shown, that an effective date more than one year from the date of issuance is in the public interest.

In consideration of the above, Standard No. 217, Bus Window Retention and Release, is added to § 571.21 of Title 49, Code of Federal Regulations, as set forth below.

This rule is issued under the authority of sections 103, 112, and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1401, 1407, and the delegation of authority at 49 CFR 1.51.

Issued on May 3, 1972.

Douglas W. Toms  
Administrator

37 F.R. 9394  
May 10, 1972



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 217

### Bus Window Retention and Release

(Docket 2-10; Notice 4)

The purpose of this notice is to respond to petitions for reconsideration of Motor Vehicle Safety Standard No. 217, Bus Window Retention and Release, in § 571.217 of Title 49, Code of Federal Regulations. The standard was issued on May 10, 1972 (37 F.R. 9394).

International Harvester stated that it manufactures an 18-passenger airport limousine, the "Stageway Coach Conversion", weighing 10,700 pounds GVWR and requested that it be exempted from the requirements of S5.2.1, "Buses with GVWR of more than 10,000 pounds." They emphasized that the 18-passenger model is equipped with 10 side doors, two more than is provided by a 15-passenger, 10,000-pound, version of a similar airport limousine vehicle which they manufacture. The NHTSA has concluded that vehicles which provide at least one door for each three passenger seating positions afford sufficient means of emergency egress regardless of their weight. S5.2.1 has accordingly been amended to provide that buses with a GVWR of more than 10,000 pounds may alternatively meet the unobstructed openings requirement of S5.2 by providing at least one door for each three passenger spaces in the vehicle. The "Stageway Coach Conversion" falls into the category of vehicles covered by this amendment and thus International Harvester's request is granted.

International Harvester, General Motors, and Chrysler all requested a clarification of the S5.1 window retention requirements because they felt it was possible to interpret the paragraph as prohibiting the use of tempered glass for window glazing. Ford also submitted a request for exemption from the window retention requirements for buses under 10,000 pounds GVWR based on its interpretation of S5.1 as precluding the use

of tempered glass. The petitioners stated that tempered glass would shatter under the application of pressure required, and were not certain whether S5.1(b), describing the development of cracks in the glazing, would cover this occurrence. The NHTSA did not intend to prohibit the use of tempered glass, and in order to correct this possible ambiguity, S5.1(b) has been amended to include shattering of the window glazing.

General Motors also requested an interpretation of the method of measuring whether 80 percent of the glazing thickness has developed cracks as described in S5.1(b). The paragraph refers to a measurement through the thickness of glass and not a measurement of the glazing surface area, as GM suggests it could mean. GM also doubted that the percentage of glazing thickness which develops cracks could be measured. The NHTSA has determined that the intent of the language is clear and that performance of this measurement is within the state of the art, so that no change in the language is necessary. The request is therefore denied.

General Motors requested a clarification of the term "minimum surface dimension" in paragraph S5.1(c). The NHTSA agrees that a clarification is necessary to prevent interpretations which may not meet the intent of this standard, and the paragraph has been accordingly amended to specify that the dimension is to be measured through the center of the area of the sheet of glazing.

General Motors stated that it interpreted the head form travel rate specified in S5.1.1 of two inches per minute as a "nominal value" requirement, since no tolerances are given in the standard. The test conditions in a safety standard

Effective: September 1, 1973

represent the performance levels that the product must be *capable* of meeting. They are not instructions either to the manufacturers' or the government's test laboratories, or a requirement that the product should be tested at "exactly" those levels. The manufacturers' tests in this case should be designed to demonstrate that the vehicle would meet the stated requirements *if* tested at two inches per minute. If that is what General Motors means by a "nominal value", its interpretation is correct.

In consideration of the foregoing, Motor Vehicle Safety Standard No. 217, Bus Window

Retention and Release, 49 CFR 571.217, is amended....

Effective date: September 1, 1973.

This notice is issued under the authority of sections 103, 112, and 119 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1401, 1407, and the delegation of authority at 49 CFR 1.51.

Issued on August 30, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 18034**  
**September 6, 1972**

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 217****Bus Window Retention and Release**

(Docket No. 2-10; Notice 5)

The purpose of this notice is to amend Motor Vehicle Safety Standard No. 217, Bus Window Retention and Release, 49 CFR § 571.217, in response to petitions received. Several minor amendments for purposes of clarification have also been made. The standard was published initially on May 10, 1972, (37 F.R. 9394), and amended September 6, 1972 (37 F.R. 18034).

Wayne Corporation has petitioned that the torque limit of 20 inch-pounds for the actuation of rotary emergency exit releases in S5.3.2(a) (3) of the standard is impractical. The Blue Bird Body Company also objected to the requirement, requesting that the limit be raised to 225 inch-pounds in order to avoid inadvertent openings. The NHTSA has decided, based on these petitions, that a maximum torque requirement is redundant, since the force magnitude generally is limited in S5.3.2 to not more than twenty pounds. Accordingly the torque requirement is deleted from the rule.

Blue Bird also requested that Figure 3A, which depicts access region for roof and side emergency exits without adjacent seats in both an upright and overturned bus, be made more explicit.

In response to this request, Figure 3A is being replaced by two figures, one of which depicts

a side emergency exit (Figure 3A), and the other a roof emergency exit (Figure 3B). Existing Figure 3B, depicting access regions for a rear exit with a rear shelf or other obstruction behind the rearmost seat, becomes Figure 3C. A new Figure 3D is added to depict rear seat access regions in buses not having a rear shelf or other obstruction behind the rearmost seat, a configuration common to school buses. Paragraph S5.2.1, regarding provision of emergency exits, is amended to make it clear that a required rear exit must meet the requirements of S5.3 through S5.5 when the bust is overturned on either side, with the occupant standing facing the exit, as well as when the bus is upright.

In consideration of the above, Standard No. 217, Bus Window Retention and Release, 49 CFR 571.217, is amended . . . .

*Effective date:* September 1, 1973.

(Sec. 103, 112, 119, P.L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1407) and the delegation of authority at 49 CFR 1.51.

Issued on February 28, 1973.

Douglas W. Toms  
Administrator

**38 F.R. 6070**  
**March 6, 1973**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 217

### Bus Window Retention and Release

(Docket No. 2-10; Notice 7)

This notice amends Federal Motor Vehicle Safety Standard No. 217, "Bus Window Retention and Release" (49 CFR § 571.217), to exempt from the standard buses manufactured for the purpose of transporting persons under physical restraint. The amendment is based on a notice of proposed rulemaking published October 1, 1973 (38 F.R. 27227), following petitions received from the Bureau of Prisons, United States Department of Justice.

The comments received in response to the proposal agreed that buses manufactured for the specified purpose should not be provided with the emergency exits required by Standard No. 217. The standard specifies that buses contain emergency exits operable by bus occupants, requirements which the NHTSA considers obviously incompatible with the need to transport prison inmates. The National Transportation Safety Board (NTSB) commented, however, that compensatory measures should be taken to minimize the likelihood of fire in prison buses, since the probability of safely evacuating a prison bus is less than that of any other type of bus. The NTSB urged that the exemption be limited to diesel-fueled buses, since diesel fuel is less likely to ignite than gasoline.

The NHTSA recognizes the desirability of minimizing the likelihood of fire in buses. How-

ever, at the present time it is not practical to expect that all newly manufactured prison buses be equipped with diesel engines, given the apparent immediate need for the exemption. Appropriate rulemaking action can be taken in the future if it appears necessary to mitigate from a safety standpoint the loss of emergency exits in prison buses.

In light of the above, paragraph S3 of section 571.217, Title 49, Code of Federal Regulations (Motor Vehicle Safety Standard No. 217), is amended. . . .

Effective date: June 3, 1974. This amendment imposes no additional burdens on any person and relieves restrictions found to be unwarranted. Accordingly, good cause exists and is hereby found for an effective date less than 180 days from the date of issuance.

(Secs. 103, 112, and 119, Pub. L. 89-563; 80 Stat. 718; 15 U.S.C. 1392, 1491, 1407; delegations of authority at 49 CFR 1.51.)

Issued on April 26, 1974.

James B. Gregory  
Administrator

**39 F.R. 15274**  
**May 2, 1974**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 217

### Bus Window Retention and Release

(Docket No. 75-6; Notice 2)

This notice amends Federal Motor Vehicle Safety Standard No. 217, *Bus Window Retention and Release*, 49 CFR 571.217, to clarify the marking requirements for emergency exits on buses. The amendment requires certain markings on all bus emergency exits except manually-operated windows of sufficient size and doors in buses with a GVWR of 10,000 pounds or less.

The amendment was proposed in a notice published April 18, 1975 (40 FR 17266). Comments were received from Chrysler Corporation and General Motors. Chrysler concurred with the proposal. GM, while also concurring, suggested that the wording of the amendment be modified somewhat. The amendment has been reworded to reflect more clearly the intent of this amendment, distinguishing between emergency exits that require markings and those that do not. The NHTSA has determined that special emergency exit markings are unnecessary for doors and manually-operated windows in buses with a GVWR of 10,000 pounds or less. This amendment does not exempt buses with a GVWR of 10,000 pounds or less from complying with the unobstructed openings requirements of S5.2.

It only provides that the openings do not have to be marked as emergency exits. However, specially-installed emergency exits in such buses, such as push-out windows, are not exempted from the marking requirements.

The amendment also allows bus manufacturers the option of designating an emergency door as "Emergency Door" or "Emergency Exit." This will bring Standard No. 217 into conformity with current NHTSA interpretations of the emergency exit marking requirements. However, any emergency exit other than a door must have the designation "Emergency Exit."

Accordingly, S5.5.1 of 49 CFR 571.217, *Bus Window Retention and Release*, is amended . . . .

*Effective date:* October 16, 1975.

(Secs. 103, 112, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1407); delegations of authority at 49 CFR 1.51).

Issued on October 8, 1975.

Gene G. Mannella  
Acting Administrator

**40 F.R. 48512**

**October 16, 1975**



## MOTOR VEHICLE SAFETY STANDARD NO. 217

### Bus Window Retention and Release

**S1. Scope.** This standard establishes requirements for the retention of windows other than windshields in buses, and establishes operating forces, opening dimensions, and markings for push-out bus windows and other emergency exits.

**S2. Purpose.** The purpose of this standard is to minimize the likelihood of occupants being thrown from the bus and to provide a means of readily accessible emergency egress.

**S3. Application.** [This standard applies to buses, except buses manufactured for the purpose of transporting persons under physical restraint. (39 F.R. 15274—May 2, 1974. Effective: 6/3/74)]

#### S4. Definitions.

“Push-out window” means a vehicle window designed to open outward to provide for emergency egress.

“Adjacent seat” means a designated seating position located so that some portion of its occupant space is not more than 10 inches from an emergency exit, for a distance of at least 15 inches measured horizontally and parallel to the exit.

“Occupant space” means the space directly above the seat and footwell, bounded vertically by the ceiling and horizontally by the normally positioned seat back and the nearest obstruction of occupant motion in the direction the seat faces.

#### S5. Requirements.

**S5.1 Window Retention.** Except as provided in S5.1.2, each piece of window glazing and each surrounding window frame, when tested in accordance with the procedure in S5.1.1 under the conditions of S6.1 through S6.3, shall be retained by its surrounding structure in a manner that prevents the formation of any opening large enough to admit the passage of a 4-inch diameter sphere under a force, including the weight of

the sphere, of 5 pounds until any one of the following events occurs:

(a) A force of 1200 pounds is reached.

(b) [At least 80% of the glazing thickness has developed cracks running from the load contact region to the periphery at two or more points, or shattering of the glazing occurs. (37 F.R. 18034—September 6, 1972. Effective: 9/1/73)]

(c) [The inner surface of the glazing at the center of force application has moved relative to the window frame, along a line perpendicular to the undisturbed inner surface, a distance equal to one-half of the square root of the minimum surface dimension measured through the center of the area of the entire sheet of window glazing. (37 F.R. 18034—September 6, 1972. Effective: 9/1/73)]

**S5.1.1** An increasing force shall be applied to the window glazing through the head form specified in Figure 4, outward and perpendicular to the undisturbed inside surface at the center of the area of each sheet of window glazing, with a head form travel of 2 inches per minute.

**S5.1.2** The requirements of this standard do not apply to a window whose minimum surface dimension measured through the center of its area is less than 8 inches.

**S5.2 Provision of Emergency Exits.** Buses other than school buses shall provide unobstructed openings for emergency exit which collectively amount, in total square inches, to at least 67 times the number of designated seating positions on the bus. At least 40 percent of the total required area of unobstructed openings, computed in the above manner, shall be provided on each side of a bus. However, in determining the total unobstructed openings provided by a bus, no emergency exit, regardless of its area, shall be credited with more than 536 square inches of the total area requirement.

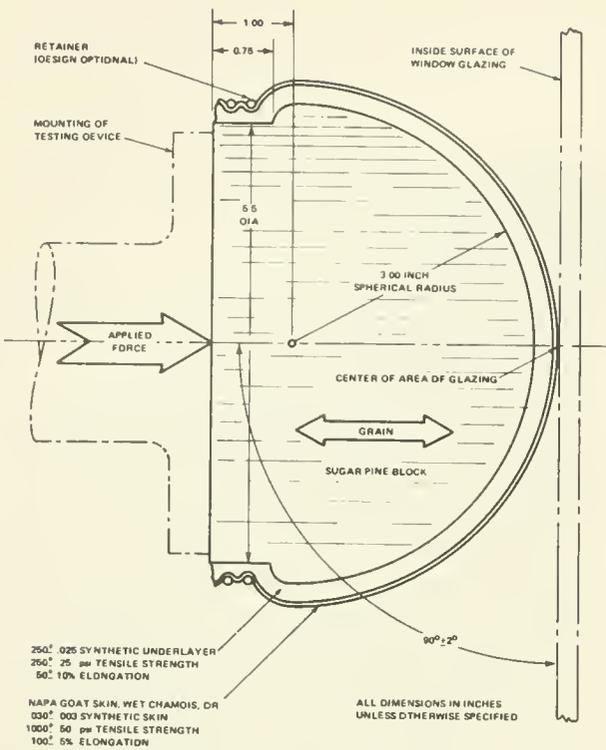


FIGURE 4 HEAD FORM

**55.2.1 Buses with GVWR of more than 10,000 pounds.** [Except as provided in 55.2.1.1, buses with a GVWR of more than 10,000 pounds shall meet the unobstructed openings requirements by providing side exits and at least one rear exit that conforms to 55.3 through 55.5. The rear exit shall meet the requirements when the bus is upright and when the bus is overturned on either side, with the occupant standing facing the exit. When the bus configuration precludes installation of an accessible rear exit, a roof exit that meets the requirements of 55.3 through 55.5 when the bus is overturned on either side, with the occupant standing facing the exit, shall be provided in the rear half of the bus. (38 F.R. 6070—March 6, 1973. Effective: 9/1/73)]

**55.2.1.1** A bus with GVWR of more than 10,000 pounds may satisfy the unobstructed openings requirement by providing at least one side door for each three passenger seating positions in the vehicle. (37 F.R. 18034—September 6, 1972. Effective: 9/1/73)]

**55.2.2 Buses with a GVWR of 10,000 pounds or less.** Buses with a GVWR of 10,000 pounds or less may meet the unobstructed openings requirement by providing:

(a) Devices that meet the requirements of 55.3 through 55.5 without using remote controls or central power systems;

(b) Windows that can be opened manually to a position that provides an opening large enough to admit unobstructed passage, keeping a major axis horizontal at all times, of an ellipsoid generated by rotating about its minor axis an ellipse having a major axis of 20 inches and a minor axis of 13 inches; or

(c) Doors.

**55.2.3 School Buses.** The emergency exit requirements do not apply to school buses, but if a school bus contains any push-out windows or other emergency exits, these exits shall conform to 55.3 through 55.5.

**55.3 Emergency exit release.**

**55.3.1** [Each push-out window or other emergency exit shall have a release mechanism located within the regions specified in Figure 1, Figure 2, or Figure 3. The lower edge of the region in Figure 1, and Region B in Figure 2, shall be located 5 inches above the adjacent seat, or 2 inches above the armrest, if any, whichever is higher. (38 F.R. 6070—March 6, 1973. Effective: 9/1/73)]

**55.3.2** When tested under the conditions of S6, both before and after the window retention test required by 55.1, each emergency exit shall allow manual release of the exit by a single occupant using force applications each of which conforms, at the option of the manufacturer, either to (a) or (b). The release mechanism or mechanisms shall require for release one or two force applications, at least one of which differs by 90 to 180° from the direction of the initial push-out motion of the emergency exit (outward and perpendicular to the exit surface).

(a) Low-force application.

*Location:* As shown in Figure 1 or Figure 3.

*Type of Motion:* Rotary or straight.

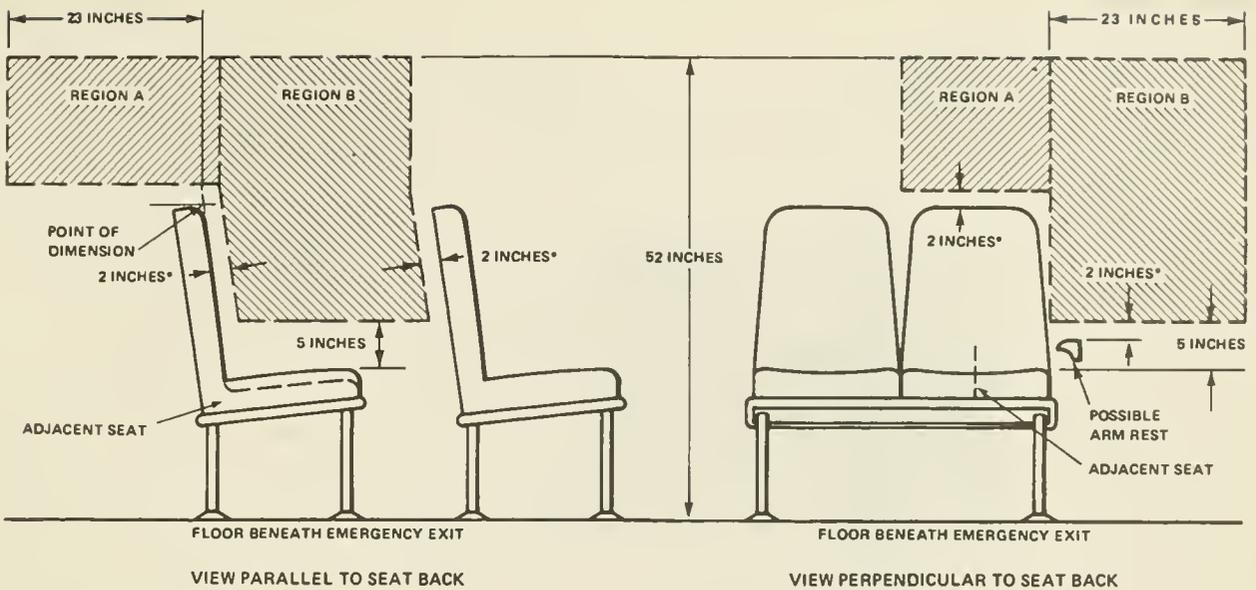
*Magnitude:* [Not more than 20 pounds. (38 F.R. 6070—March 6, 1973. Effective: 9/1/73)]

(b) High force application.

*Location:* As shown in Figure 2 or Figure 3.

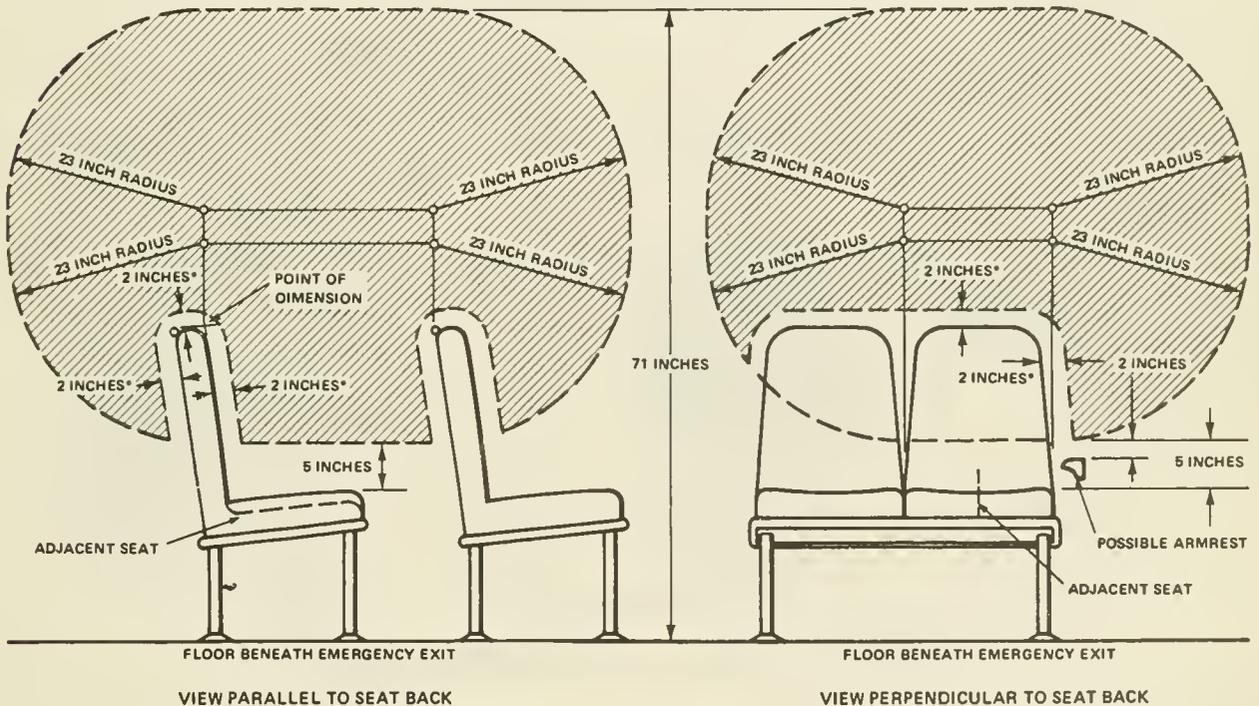
*Type of Motion:* Straight, perpendicular to the undisturbed exit surface.

*Magnitude:* Not more than 60 pounds.



\*CLEARANCE AREA AROUND SEAT BACK, ARM RESTS, AND OTHER OBSTRUCTIONS

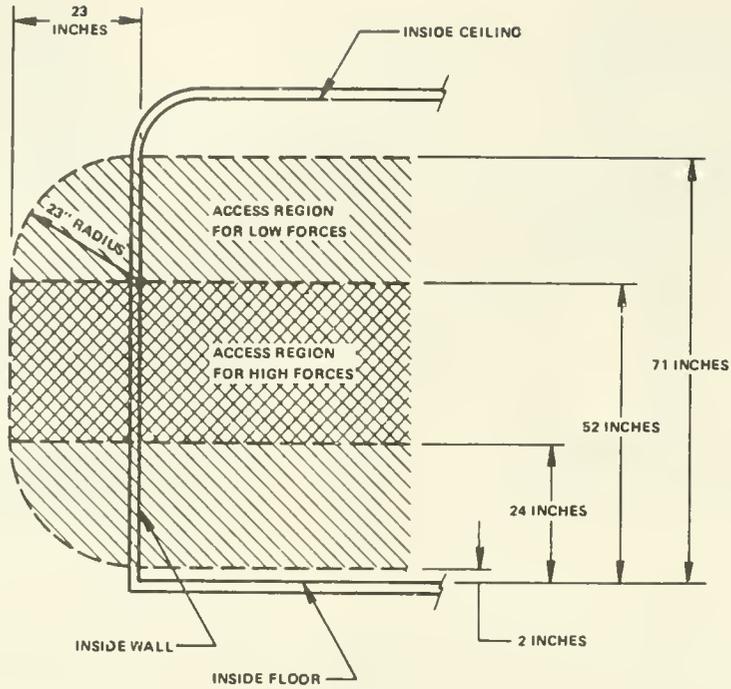
FIGURE 2 HIGH-FORCE ACCESS REGIONS FOR EMERGENCY EXITS HAVING ADJACENT SEATS



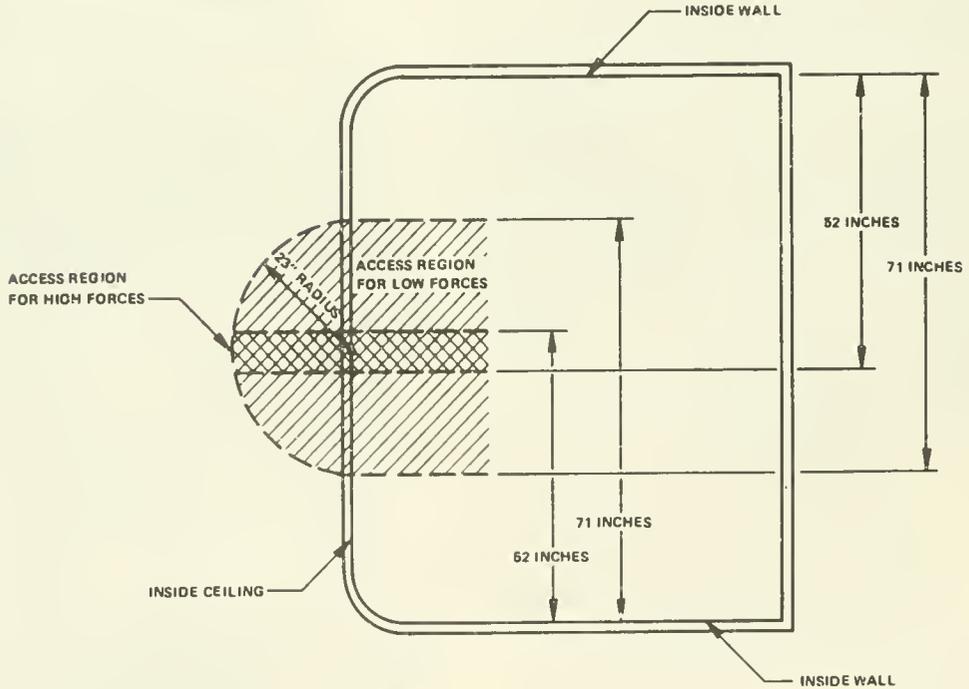
\*CLEARANCE AREA AROUND SEAT BACK, ARM RESTS, AND OTHER OBSTRUCTIONS

ACCESS REGION IS THE SPATIAL VOLUME CREATED BY THE INTERSECTION OF THE PROJECTIONS OF THE AREAS SHOWN IN THE TWO VIEWS.

FIGURE 1 LOW-FORCE ACCESS REGION FOR EMERGENCY EXITS HAVING ADJACENT SEATS

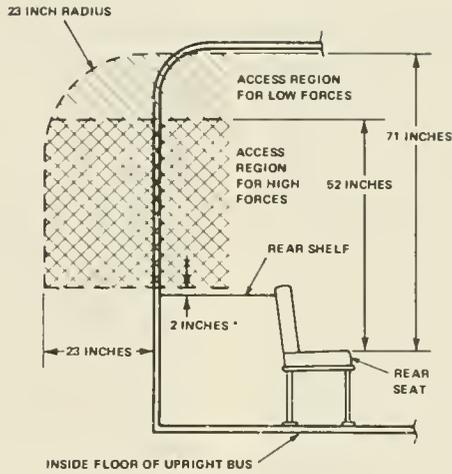


3A. SIDE EMERGENCY EXIT



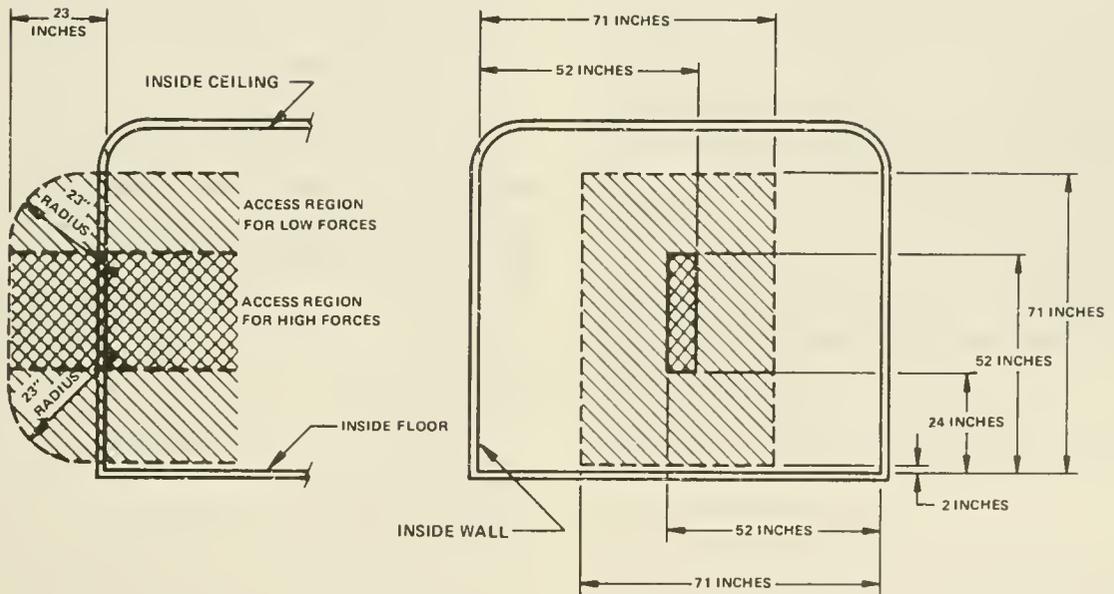
3B. ROOF EMERGENCY EXIT

FIGURE 3—LOW AND HIGH-FORCE ACCESS REGIONS FOR EMERGENCY EXITS WITHOUT ADJACENT SEATS



\*TYPICAL CLEARANCE AROUND OBSTRUCTIONS

3C. REAR EMERGENCY EXIT WITH REAR OBSTRUCTION



3D. REAR EMERGENCY EXIT WITHOUT REAR OBSTRUCTION

FIGURE 3—CONTINUED

**S5.4 Emergency exit extension.** Each push-out window or other emergency exit shall, after the release mechanism has been operated, under the conditions of S6, before and after the window retention test required by S5.1, using the reach distances and corresponding force levels specified in S5.3.2 be manually extendable by a single occupant to a position that provides an opening large enough to admit unobstructed passage, keeping a major axis horizontal at all times, of an ellipsoid generated by rotating about its minor axis an ellipse having a major axis of 20 inches and a minor axis of 13 inches.

**S5.5 Emergency exit identification.**

**S5.5.1** [Except for windows serving as emergency exits in accordance with S5.2.2(b) and doors in buses with a GVWR of 10,000 pounds or less, each emergency door shall have the designation "Emergency Door" or "Emergency Exit" and each push-out window or other emergency exit besides a door shall have the designation "Emergency Exit". Concise operating instructions shall be located within 6 inches of the release mechanism. When a release mechanism is not located within an occupant space of an adjacent seat, a label meeting the requirements of S5.5.2 that indicates the location of the nearest release mechanism shall be placed within that occupant space.

**EXAMPLE:** "EMERGENCY EXIT INSTRUCTIONS LOCATED NEXT TO SEAT AHEAD"

(40 F.R. 48512—October 16, 1975. Effective: 10/16/75)]

**S5.5.2** Except as provided in S5.5.2.1, each marking shall be legible, when the only source

of light is the normal night-time illumination of the bus interior, to occupants having corrected visual acuity of 20/40 (Snellen ratio) seated in the adjacent seat, seated in the seat directly adjoining the adjacent seat, and standing in the aisle location that is closest to that adjacent seat. The marking shall be legible from each of these locations when the other two corresponding locations are occupied.

**S5.5.2.1** If the exit has no adjacent seat, the marking must meet the legibility requirements of S5.5.2 for occupants standing in the aisle location nearest to the emergency exit, except for a roof exit, which must meet the legibility requirements for occupants positioned with their backs against the floor opposite the roof exit.

**S6. Test conditions.**

**S6.1** The vehicle is on a flat, horizontal surface.

**S6.2** The inside of the vehicle and the outside environment are kept at any temperature from 70° to 85° Fahrenheit for 4 hours immediately preceding the tests, and during the tests.

**S6.3** For the window retention test, windows are installed, closed, and latched (where latches are provided) in the condition intended for normal bus operation.

**S6.4** For the emergency exit release and extension tests, windows are installed as in S6.3, seats, armrests, and interior objects near the windows are installed as for normal use, and seats are in the upright position.

**37 F.R. 9394  
May 10, 1972**

## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 218

### Motorcycle Helmets

(Docket No. 72-6; Notice 2)

The purpose of this amendment to Part 571 of Title 49, Code of Federal Regulations, is to add a new Motor Vehicle Safety Standard No. 218, Motorcycle Helmets, 49 CFR § 571.218, that establishes minimum performance requirements for motorcycle helmets manufactured for use by motorcyclists and other motor vehicle users.

A notice of proposed rulemaking on this subject was published on May 19, 1972 (37 F.R. 10097). The comments received in response to the notice have been carefully considered in this issuance of a final rule.

In the previous notice, the NHTSA proposed that, effective September 1, 1974, the performance levels for the impact attenuation requirements be upgraded to that of the Head Injury Criterion (HIC) required by Motor Vehicle Safety Standard No. 208. A number of comments on this subject sought to defer a final determination until further research and additional tests could be conducted. The agency has carefully reviewed the issues raised by these comments and has determined that technical data presently being generated on this matter by several investigations should be considered in upgrading the impact attenuation requirements. Accordingly, a decision on the upgrading will be deferred until after this research has been completed and the results evaluated, and after any appropriate data have been reviewed.

Comments to the docket on the initial impact attenuation requirement ranged from abolishing the time duration criteria of 2.0 milliseconds and 4.0 milliseconds at the 200g and 150g levels, respectively, to increasing these criteria to 2.8 milliseconds at the 200g level and 5.6 milliseconds at the 150g level. One approach taken in regard to this requirement contends that the available test data are insufficient for quantifying time

limits for the relatively short duration accelerations which are involved in helmet testing. Several comments questioned the validity of the proposed time duration limits, since these limits were based on the optional swing-away (as opposed to fixed anvil) test of the American National Standards Institute (ANSI) Standard Z90.1-1966, which was omitted from the most recent issues of the Z90.1 Standard (1971 and 1973) and was not contained in the proposed motorcycle helmet standard. An additional comment points out that helmets designed to meet higher energy impacts than the initial impact attenuation requirement occasionally have difficulty meeting a 2.0 millisecond requirement at the 200g level.

A review of available biomechanical data indicates that the head impact exposure allowed by the 2.0 and 4.0 millisecond limits at the 200g and 150g levels, respectively, is greater than that allowed by other measures of head injury potential. It is the agency's view, moreover, that the best evidence indicates that an increase in the time duration criteria would permit a substantial reduction in the protection provided to the helmet wearer. Since the comments to the docket did not provide any new data or sufficiently compelling arguments which would justify relaxing the proposed limits for tolerable head impact exposure, the 2.0 and 4.0 millisecond criteria are retained as part of the initial impact attenuation criteria.

In response to comments recommending that the allowable weight of the supporting assembly for the impact attenuation drop test be changed to 20% instead of the proposed 10% of the weight of the drop assembly, the NHTSA has determined that such a change would enable more durable testing equipment to be used with-

out any significant effect on test results. Accordingly, this weight limitation has been raised to 20%.

Several comments expressed concern that the proposed 0.04-inch indentation limit included under the penetration test would create problems of measurement. The agency has determined that the intent of this 0.04-inch indentation limit is sufficiently accomplished by the requirement that the striker not contact the surface of the test headform, and the 0.04-inch indentation limit is therefore deleted from the final rule. Further, in consideration of the need to readily detect any contact by the striker, the agency has determined that the contactable surfaces of the penetration test headforms should be constructed of a metal or metallic alloy which will insure detection. Several minor changes in the test conditions for the penetration test have also been made, without altering the substance of those conditions.

A number of comments recommended that where the retention system consists of components which can be independently fastened without securing the complete assembly, such components should not have to individually meet the retention test requirements. Since helmets have a tendency to be thrown off by a crash and motorcyclists sometimes only partially fasten the retention system where such an option exists, the agency has concluded that retention components as well as the entire assembly should meet the test requirements in every fastening mode as specified in the notice of proposed rulemaking.

A number of comments requested that the 105° minimum peripheral vision clearance to each side of the midsagittal plane be increased to 120°. The 105° minimum requirement was proposed because it satisfies a demand by the public for the availability of some helmets which provide added protection to the temporal areas in exchange for a minimal reduction in peripheral vision capability without compromising the safe limits of peripheral vision clearance. A review of available field-of-vision studies and the lack of any evidence to the contrary indicate that 105° minimum clearance to each side of the midsagittal plane provides ample peripheral vision capability. Since the requests for increasing the

minimum clearance to 120° were not accompanied by any supporting data or arguments, the agency has concluded that the standard should allow the additional protection which the 105° minimum clearance would permit and, accordingly, this requirement is retained.

With respect to providing important safety information in the form of labeling, one comment recommended that, due to possible label deterioration, both the manufacturer's identification and the helmet model designation should be permanently marked by etching, branding, stamping, embossing, or molding on the exterior of the helmet shell or on a permanently attached component so as to be visible when the helmet is in use. The NHTSA has determined that the practical effect of this recommendation is accomplished by requiring each helmet to be permanently and legibly labeled. The method to be used to permanently and legibly affix a label for each helmet is therefore left to the discretion of the manufacturer. However, in order that there may be some external, visual evidence of conformity to the standard, the labeling requirement has been further modified to require manufacturer certification in the form of the DOT symbol to appear in permanent form on the exterior of the helmet shell.

One comment recommended that the preliminary test procedures include the application of a 10-pound static test load to the apex of a helmet after it is placed on the reference headform and before the "test line" is drawn to insure that the reference marking will be relatively uniform, thus reducing variances in test results of identical helmets. The agency concurs in this recommendation and it has been included in the standard.

A number of comments objected to the location of the test line. With respect to the proposed requirement that the test line on the anterior portion of a helmet coincide with the reference plane of its corresponding reference headform, it was pointed out that the helmet's brow area would have to be excessively thick in order to meet the impact attenuation criteria at any point less than approximately 1 inch from the brow opening. The data indicate that this objection is valid, and the location of the anterior

test line has been modified by placing it 1 inch above and parallel to the reference plane.

A number of comments objected to the proposed requirement that the test line on the posterior portion of a helmet coincide with the basic plane of its corresponding reference headform. The principal objection expressed concern that, by extending the posterior test line to the basic plane, the resulting increase in the posterior surface of a helmet could cause the helmet to impact the wearer's neck where rearward rotation of the head occurs, thereby increasing the potential for injury in certain cases. After further consideration of this aspect of helmet safety, the agency has determined that the location of the test line on the posterior portion of a helmet should be modified by placing it 1 inch below and parallel to the reference plane.

Several comments questioned the sufficiency of the anatomical dimensions and diagrams provided for the reference headforms in the Appendix of the notice of proposed rulemaking. Of these comments, two proposed adopting the dimensional specifications of the existing ANSI Z90.1 headform, while a third recommended the

inclusion of an additional reference headform to accommodate their smallest child helmet. The agency has concluded that, in order to promote greater uniformity in testing and more repeatable results, one of the reference headforms should have the dimensional specifications of the readily available Z90.1 headform, the others being scaled proportionally, and that a reference headform for smaller child helmets should be added. Accordingly, the Appendix has been revised to reflect these changes.

*Effective date:* March 1, 1974.

In consideration of the foregoing, a new Motor Vehicle Safety Standard No. 218, Motorcycle Helmets, is added as § 571.218 of Title 49, Code of Federal Regulations, as set forth below.

(Secs. 103, 112, 119, Public Law 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1407; delegation of authority at 49 CFR 1.51.)

Issued on August 9, 1973.

James B. Gregory  
Administrator

**38 F.R. 22390**  
**August 20, 1973**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 218

### Motorcycle Helmets

(Docket No. 72-6; Notice 3)

The purpose of this notice is to respond to petitions for reconsideration and petitions for rulemaking to amend Motor Vehicle Safety Standard No. 218, *Motorcycle Helmets* (49 CFR 571.218).

Standard No. 218, published on August 20, 1973, (38 F.R. 22390), established minimum performance requirements for helmets manufactured for use by motorcyclists and other motor vehicle users. Pursuant to 49 CFR 553.35, petitions for reconsideration were filed by the Safety Helmet Council of America (SHCA) and Lear-Siegler, Inc., Bon-Aire Division. Additionally, pursuant to 49 CFR 553.31, petitions to amend the standard were filed by the Z-90 Committee of the American National Standards Institute, Midwest Plastics Corp., Approved Engineering Test Laboratories, Bell-Toptex, Inc., Premier Seat and Accessory Co., Safetech Co., Sterling Products Co., Inc., Lanco Division of Roper Corp., American Safety Equipment Corp., and Electofilm, Inc.

In response to information contained in both the petitions for reconsideration and the petitions for rulemaking, the standard is being amended in some minor respects, and its effectiveness is temporarily suspended for helmets that must be tested on headform sizes A, B, and D. Requested changes in other requirements of the standard are denied.

1. *Effective date.* The NHTSA received comments from Royal Industries/Grant Division, Jefferson Helmets, Inc., and Rebcor, Inc., urging that the March 1, 1974, effective date be reaffirmed and stating that they either have already produced or could produce helmets by that date which meet the standard's requirements. The NHTSA commends these manufacturers for

their outstanding efforts and their positive attitude toward producing safer products.

The parties who submitted petitions, however, all requested some postponement of the standard's effective date. The postponement requests ranged from an indefinite extension to a delay until the manufacturers are able to test helmets to the required headforms, and were sought on the following three grounds: (1) additional time in order to obtain headforms required for reference marking and testing; (2) alleged inadequacy of the headform diagrams provided in the final rule; and (3) inability to find a supplier or forge for the K-1A magnesium alloy required for the impact attenuation test headforms.

As explained in the preamble to the standard, the headforms provided in the Appendix of the notice of proposed rulemaking (May 19, 1972, 37 F.R. 10097), were changed by the agency in order to utilize the readily available Z90.1 headform and to promote greater uniformity in testing and more repeatable results. In view of the fact that the size C headform of the final rule is identical to the Z90.1 headform, is readily available in test laboratories, is used for several ongoing certification programs, and that the other headforms are scaled proportionally, the NHTSA anticipated that competition would motivate both the manufacturers and the test laboratories to take the initiative either to obtain or to produce the other required headforms. It now appears that the problem of finding a supplier or forge for the K-1A magnesium alloy required for the A, B, and D impact attenuation test headforms is substantial enough to justify the requests for a postponement of the standard's effective date for helmets that must be tested on headform sizes A, B, and D.

Because the NHTSA determined that the size C headform would be identical to the Z90.1 headform, the low resonance magnesium alloy (K-1A) specified for making the Z90.1 headform also was specified for headforms required by the standard. Statements that it might be difficult to find suppliers or forges for the material were first made in the petitions on the standard. The NHTSA has determined that other low-resonance magnesium alloys can be substituted for the K-1A type without causing significant variances in the results of any of the helmet tests, so that manufacturers can determine compliance without undue cost penalties even where the K-1A alloy is in short supply. Accordingly, the K-1A alloy is retained as the basic headform material for the standard.

In view of the foregoing considerations with particular emphasis on the fact that testing services through commercial testing laboratories have been readily available for several years for the ANSI Z90.1 Standard headform, which is the size C headform of the standard, the requests for postponing the standard's effective date are denied with respect to helmets that fit headform C.

The petitions for a postponement of the effective date are granted, however, with respect to helmets that must be tested on headforms A, B, and D. A sentence is being added to the Application section of the standard, excepting from its coverage helmets that must be tested on these headform sizes. The second sentence in S6.1.1 of the standard relating to the selection of a reference headform to be used for reference marking should be disregarded until the standard is made effective for helmets that must be tested on headform sizes A, B, and D. To facilitate both the production and availability of headforms, the NHTSA has contracted with the Snell Memorial Foundation to monitor the preparation of detail drawings and model headforms consistent with the requirements of the standard. The drawings and headforms will be included in the docket for public examination upon their completion. A review of the leadtime information provided by the comments to the docket indicates that approximately 8 months of manufacturer leadtime will be needed after the detail dimensional drawings of the A, B, and D head-

forms become available. When the drawings are available, notice to that effect will be published in the Federal Register. The planned effective date for the A, B, and D-size helmets is 8 months from the date of the publication of that notice.

2. *Time duration criteria for impact attenuation test.* Petitions on the impact attenuation test time duration criteria of paragraphs S5.1(b) ranged from eliminating the time duration criteria of 2.0 milliseconds and 4.0 milliseconds at the 200g and 150g levels, respectively, to increasing these criteria to 3.0 milliseconds at the 200g level and 6.0 milliseconds at the 150g level. None of these petitions raised any issues or submitted any data different from those already considered by the NHTSA. The available biomechanical data indicate that the head impact protection provided to the helmet user by the standard's time duration criteria is greater than that which would result from the proposed changes, and the 2.0 and 4.0 millisecond criteria are retained.

3. *Conditioning period.* One petitioner requested that the 24-hour conditioning requirement for each of the four impact tests in paragraph S6.3 be modified to "4 to 24 hours," consistent with the requirements of ANSI Z90.1, arguing that 4 hours is sufficient to condition a helmet to the various environmental conditions required for the respective tests without compromising the intent of the standard. Upon further study of this matter, the NHTSA has concluded that, although 4 hours would not be sufficient as a general condition, changing the conditioning period to 12 hours would facilitate product testing without compromising the intent of the standard. Accordingly, paragraph S6.3, "Conditioning," is revised by changing the "24-hour" conditioning requirement to "12 hours" in each place the 24-hour requirement appears.

4. *Low temperature conditioning requirement.* Three petitioners objected to the  $-20^{\circ}$  F. low temperature conditioning requirement in paragraph S6.3(b) on the basis that the requirement is overly severe. On review of available information, this agency has determined that precise data on the best low temperature requirements for testing are not available. Pending receipt of more specific information, therefore, the cold

temperature requirement of 14° F. that has been used up to now by the American National Standards Institute appears to be the most appropriate. Accordingly, paragraph S6.3(b), "Low temperature," is revised by changing the "-20° F." conditioning requirement to "14° F."

5. *Projections.* One petitioner requested that paragraph S5.5, "Projections," be changed to permit a maximum rigid projection inside the helmet shell of 0.080 in. with a minimum diameter of 0.150 in. The basis for this request is to allow for the use of eyelets and rivets for attachment of snaps for face shields and retention systems. The NHTSA is concerned that due care be exercised with regard to minimizing the injury producing potential of such fasteners. Eyelets and rivets for the attachment of snaps should be designed to form a portion of the continuous surface of the inside of the helmet shell. Where they are so designed, such attachments would not be "rigid projections." Accordingly, no revision to this requirement is necessary.

6. *Labeling.* One petitioner recommended that the labeling requirements in paragraph S5.6 be clarified with the help of manufacturers and other interested parties. Since the petitioner did not specify the points requiring clarification and because no other comments were received on this subject, the NHTSA has determined that no sufficient reasons have been given to change the labeling requirements.

In consideration of the foregoing, 49 CFR 571.218, Motor Vehicle Safety Standard No. 218, *Motorcycle Helmets*, is amended. . . .

*Effective date:* March 1, 1974.

(Secs. 103, 112, 119, Public Law 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1407; delegation of authority at 49 CFR 1.51.)

Issued on January 23, 1974.

James B. Gregory  
Administrator  
**39 F.R. 3554**  
**January 28, 1974**



## MOTOR VEHICLE SAFETY STANDARD NUMBER 218

### MOTORCYCLE HELMETS

**S1. Scope.** This standard establishes minimum performance requirements for helmets designed for use by motorcyclists and other motor vehicle users.

**S2. Purpose.** The purpose of this standard is to reduce deaths and injuries to motorcyclists and other motor vehicle users resulting from head impacts.

**S3. Application.** This standard applies to helmets designed for use by motorcyclists and other motor vehicle users. [The requirements of this standard apply to helmets that fit headform size C, manufactured on or after March 1, 1974. Helmets that do not fit headform size C will not be covered by this standard until it is

extended to those sizes by further amendment. (39 F.R. 3554—January 28, 1974. Effective: 3/1/74)]

#### S4. Definitions.

“Basic plane” means a plane through the centers of the right and left external ear openings and the lower edge of the eye sockets (Figure 1) of a reference headform (Figure 2) or test headform.

“Midsagittal plane” means a longitudinal plane through the apex of a reference headform or test headform that is perpendicular to the basic plane (Figure 3).

“Reference plane” means a plane above and parallel to the basic plane on a reference head-

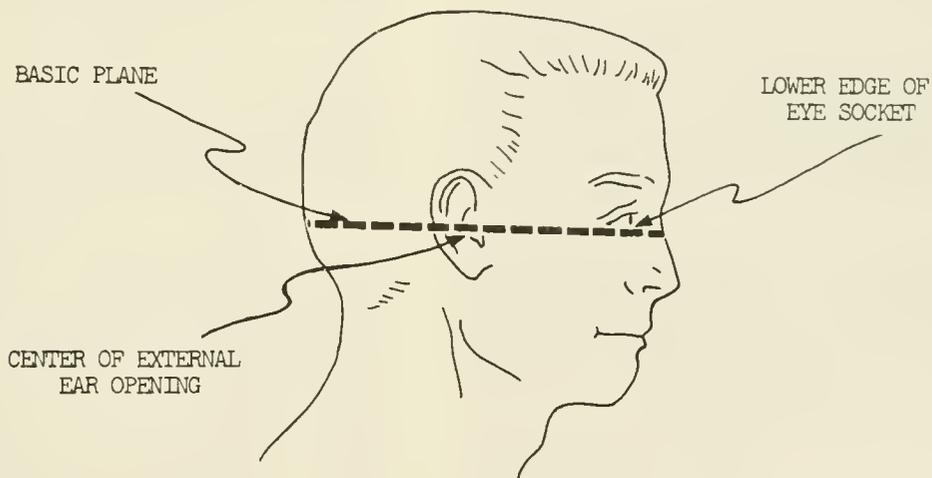


Figure 1

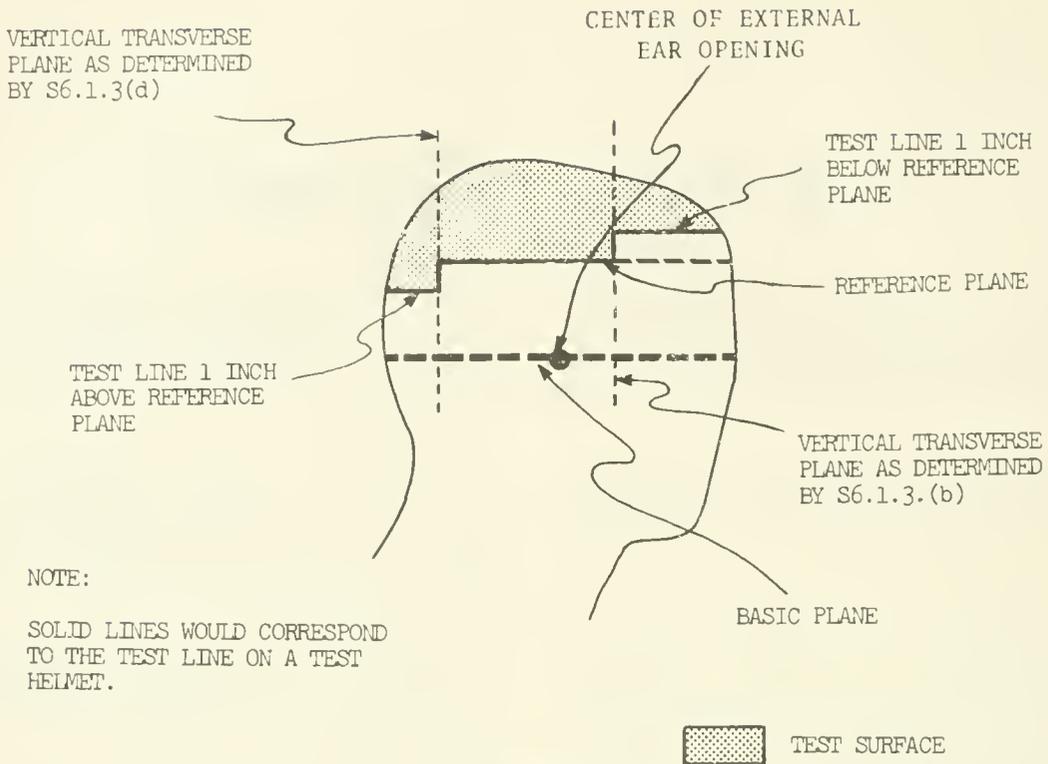


Figure 2

form or test headform (Figure 2) at the distance indicated in the Appendix.

“Reference headform” means a measuring device contoured to the dimensions of one of the four headforms described in the Appendix, with surface markings indicating the locations of the basic, midsagittal, and reference planes, and the centers of the external ear openings.

“Test headform” means a test device contoured to the dimensions of one of the four reference headforms described in the Appendix for all surface areas that contact the helmet, with surface markings indicating the locations of the basic, midsagittal, and reference planes.

“Retention system” means the complete assembly by which the helmet is retained in position on the head during use.

“Helmet positioning index” means the distance in inches, as specified by the manufacturer, from the lowest point of the brow opening at the lateral midpoint of the helmet to the basic plane of a reference headform, when the helmet is

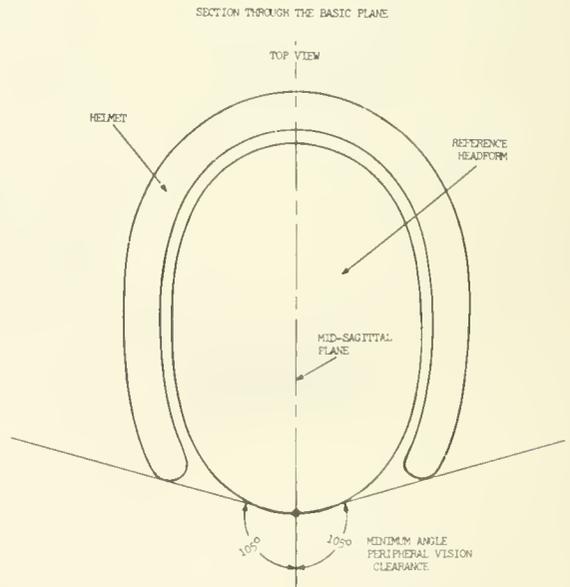


Figure 3

firmly and properly positioned on the reference headform.

**55. Requirements.** Each helmet shall meet the requirements of S5.1 through S5.3 when subjected to any conditioning procedure specified in S6.3, and tested in accordance with S7.

**55.1 Impact attenuation.** When an impact attenuation test is conducted in accordance with S7.1, all of the following requirements shall be met:

- (a) Peak accelerations shall not exceed 400g;
- (b) Accelerations in excess of 200g shall not exceed a cumulative duration of 2.0 milliseconds; and
- (c) Accelerations in excess of 150g shall not exceed a cumulative duration of 4.0 milliseconds.

**55.2 Penetration.** When a penetration test is conducted in accordance with S7.2, the striker shall not contact the surface of the test headform.

**55.3 Retention system.**

**55.3.1** When tested in accordance with S7.3:

- (a) The retention system or its components shall attain the loads specified without separation; and
- (b) The adjustable portion of the retention system test device shall not move more than 1 inch measured between preliminary and test load positions.

**55.3.2** Where the retention system consists of components which can be independently fastened without securing the complete assembly, each such component shall independently meet the requirements of S5.3.1.

**55.4 Configuration.** Each helmet shall have a protective surface of continuous contour at all points on or above the test line described in S6.1.3. The helmet shall provide peripheral vision clearance of at least 105° to each side of the midsagittal plane, when the helmet is adjusted as specified in S6.2. The vertex of these angles, shown in Figure 3, shall be at the point on the anterior surface of the reference headform at the intersection of the midsagittal and basic planes. The brow opening of the helmet shall be at least 1 inch above all points in the basic plane that are within the angles of peripheral vision (see Figure 3).

**55.5 Projections.** A helmet shall not have any rigid projections inside its shell. Rigid projections outside any helmet's shell shall be limited to those required for operation of essential accessories, and shall not protrude more than 0.19 inch.

**55.6 Labeling.**

**55.6.1** Each helmet shall be permanently and legibly labeled, in a manner such that the label(s) can be easily read without removing padding or any other permanent part, with the following:

- (1) Manufacturer's name or identification.
- (2) Precise model designation.
- (3) Size.
- (4) Month and year of manufacture. This may be spelled out (e.g., June 1974), or expressed in numerals (e.g., 6/74).
- (5) The symbol DOT, constituting the manufacturer's certification that the helmet conforms to the applicable Federal Motor Vehicle Safety Standards. This symbol shall appear on the outer surface, in a color that contrasts with the background, in letters at least  $\frac{3}{8}$  inch high, centered laterally approximately  $1\frac{1}{4}$  inches from the bottom edge of the posterior portion of the helmet.
- (6) Instruction to the purchaser as follows:  
"Shell and liner constructed of (identify type(s) of materials).

"Helmet can be seriously damaged by some common substances without damage being visible to the user. Apply only the following: (Recommended cleaning agents, paints, adhesives, etc., as appropriate).

"Make no modifications. Fasten helmet securely. If helmet experiences a severe blow, return it to the manufacturer for inspection, or destroy and replace it." (On an attached tag, brochure, or other suitable means, any additional, relevant safety information should be supplied at the time of purchase.)

**55.7 Helmet positioning index.** Each manufacturer of helmets shall establish a positioning index for each helmet he manufactures. This index shall be furnished immediately to any person who requests the information, with respect to a helmet identified by manufacturer, model designation, and size.

**S6. Preliminary test procedures.** Before subjecting a helmet to the testing sequence specified in S7., prepare it according to the following procedures.

**S6.1 Reference marking.**

**S6.1.1** Use a reference headform that is firmly seated with the basic and reference planes horizontal. Place the complete helmet to be tested on the reference headform of the largest size specified in the Appendix whose circumference is not greater than the internal circumference of the headband when adjusted to its largest setting, or if no headband is provided to the corresponding interior surface of the helmet.

**S6.1.2** Apply a 10-pound static load normal to the helmet's apex. Center the helmet laterally and seat it firmly on the reference headform according to its helmet positioning index.

**S6.1.3** Maintaining the load and position described in S6.1.2, draw a line (hereinafter referred to as "test line") on the outer surface of the helmet coinciding with portions of the intersection of that surface with the following planes, as shown in Figure 2:

(a) A plane 1 inch above and parallel to the reference plane in the anterior portion of the reference headform;

(b) A vertical transverse plane 2.5 inches behind the point on the anterior surface of the reference headform at the intersection of the midsagittal and reference planes;

(c) The reference plane of the reference headform;

(d) A vertical transverse plane 2.5 inches behind the center of the external ear opening in a side view; and

(e) A plane 1 inch below and parallel to the reference plane in the posterior portion of the reference headform.

**S6.2 Helmet positioning.** Prior to each test, fix the helmet on a test headform in the position that conforms to its helmet positioning index. Secure the helmet so that it does not shift position prior to impact or to application of force during testing.

**S6.2.1** In testing as specified in S7.1 and S7.2, place the retention system in a position such that

it does not interfere with free fall, impact, or penetration.

**S6.3 Conditioning.** Immediately prior to conducting the testing sequence specified in S7., condition each test helmet in accordance with any one of the following procedures:

[(a) *Ambient conditions.* Expose to a temperature of 70° F. and a relative humidity of 50% for 12 hours.

(b) *Low temperature.* Expose to a temperature of 14° F. for 12 hours.

(c) *High temperature.* Expose to a temperature of 122° F. for 12 hours.

(d) *Water immersion.* Immerse in water at a temperature of 77° F. for 12 hours. (39 F.R. temperature of 77° F. for 12 hours.

If during testing, the time out of the conditioning environment for a test helmet exceeds 5 minutes, return the helmet to the conditioning environment for a minimum of 3 minutes for each minute out of the conditioning environment or 12 hours, whichever is less, prior to resumption of testing. (39 F.R. 3554—January 28, 1974. Effective: 3/1/74)]

**S7. Test conditions.**

**S7.1 Impact attenuation test.**

**S7.1.1** Impact attenuation is measured by determining acceleration imparted to an instrumented test headform on which a complete helmet is mounted as specified in S6.2, when it is dropped in guided free fall upon fixed hemispherical and flat steel anvils.

**S7.1.2** Each helmet is impacted at four sites with two successive, identical impacts at each site. Two of these sites are impacted upon a flat steel anvil and two upon a hemispherical steel anvil as specified in S7.1.7 and S7.1.8. The impact sites are at any point on the area above the test line described in S6.1.3, and separated by a distance not less than one-sixth of the maximum circumference of the helmet.

**S7.1.3** The guided free fall drop heights for the helmet and test headform combination onto the hemispherical anvil and flat anvil are 54.5 inches and 72 inches, respectively.

**S7.1.4** Test headforms for impact attenuation testing are constructed of magnesium alloy (K-1A), and exhibit no resonant frequencies below 3,000 Hz.

**57.1.5** Weight of the drop assembly, as specified in Table I, is the combined weight of the instrumented test headform and supporting assembly for the drop test. The weight of the supporting assembly does not exceed 20% of the weight of the drop assembly. The center of gravity of the combined test headform and supporting assembly lies within a cone with its axis vertical and forming a 10° included angle with the vertex at the point of impact.

TABLE I  
WEIGHTS FOR  
IMPACT ATTENUATION TEST  
DROP ASSEMBLY

Reference Headform Size	Weight (Lbs)*
A	7.8
B	8.9
C	11.0
D	13.4

\* Combined weight of instrumented test headform and supporting assembly for drop test.

**57.1.6** The acceleration transducer is mounted at the center of gravity of the combined test headform and supporting assembly with the sensitive axis aligned to within 5° of vertical when the test headform is in the impact position. The acceleration data channel complies with SAE Recommended Practice J211 requirements for channel class 1,000.

**57.1.7** The flat anvil is constructed of steel with a 5-inch minimum diameter impact face, and the hemispherical anvil is constructed of steel with a 1.9-inch radius impact face.

**57.1.8** The rigid mount for both of the anvils consists of a solid mass of at least 300 pounds, the outer surface of which consists of a steel plate with minimum thickness of 1 inch and minimum surface area of 1 ft.<sup>2</sup>

## 57.2 Penetration test.

**57.2.1.** The penetration test is conducted by dropping the penetration test striker in guided free fall, with its axis aligned vertically, onto the outer surface of the complete helmet, when mounted as specified in S6.2, at any point above

the test line, described in S6.1.3, except on a fastener or other rigid projection.

**57.2.2** Two penetration blows are applied at least 3 inches apart, and at least 3 inches from the centers of any impacts applied during the impact attenuation test.

**57.2.3** The height of the guided free fall is 118.1 inches, as measured from the striker point to the impact point on the outer surface of the test helmet.

**57.2.4** The contactable surfaces of the penetration test headforms are constructed of a metal or metallic alloy having a Brinell hardness number no greater than 55, which will readily permit detection should contact by the striker occur. The surface is refinished if necessary prior to each penetration test blow to permit detection of contact by the striker.

**57.2.5** The weight of the penetration striker is 6 pounds, 10 ounces.

**57.2.6** The point of the striker has an included angle of 60°, a cone height of 1.5 inches, a tip radius of 0.019 inch (standard 0.5 millimeter radius) and a minimum hardness of 60 Rockwell, C-scale.

**57.2.7** The rigid mount for the penetration test headform is as described in S7.1.8.

## 57.3 Retention system test.

**57.3.1** The retention system test is conducted by applying a static tensile load to the retention assembly of a complete helmet, which is mounted, as described in S6.2, on a stationary test headform as shown in Figure 4, and by measuring the movement of the adjustable portion of the retention system test device under tension.

**57.3.2** The retention system test device consists of both an adjustable loading mechanism by which a static tensile load is applied to the helmet retention assembly and a means for holding the test headform and helmet stationary. The retention assembly is fastened around two freely moving rollers, both of which have a 0.5 inch diameter and a 3-inch center-to-center separation, and which are mounted on the adjustable

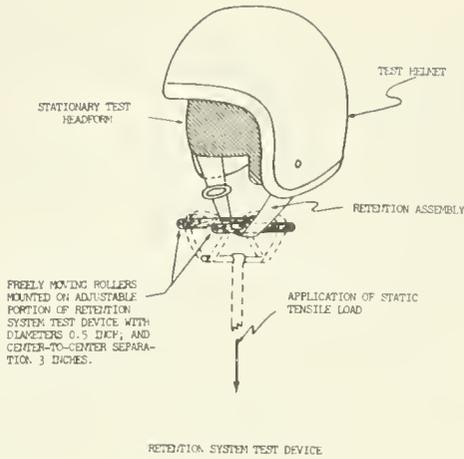


Figure 4

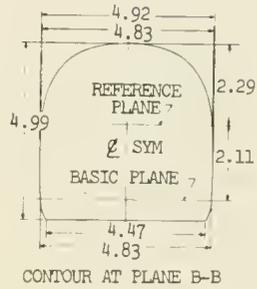
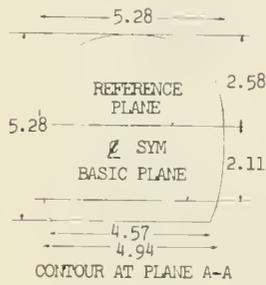
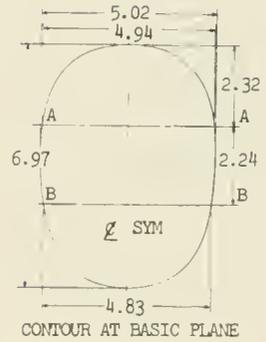
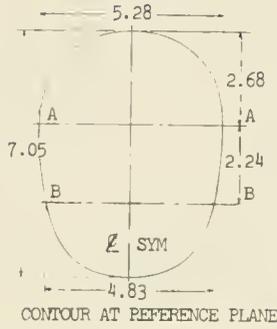
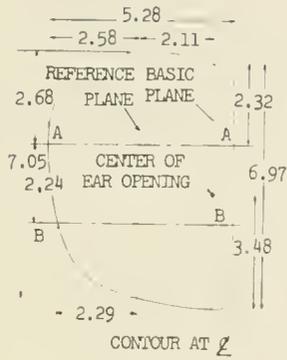
portion of the tensile loading device (Figure 4). The helmet is fixed on the test headform as necessary to ensure that it does not move during the application of the test loads to the retention assembly.

**S7.3.3** A 50-pound preliminary test load is applied to the retention assembly, normal to the basic plane of the test headform and symmetrical with respect to the center of the retention assembly for 30 seconds, and the maximum distance from the extremity of the adjustable portion of the retention system test device to the apex of the helmet is measured.

**S7.3.4** An additional 250-pound test load is applied to the retention assembly, in the same manner and at the same location as described in S7.3.3, for 120 seconds, and the maximum distance from the extremity of the adjustable portion of the retention system test device to the apex of the helmet is measured.

APPENDIX

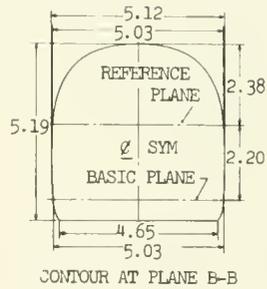
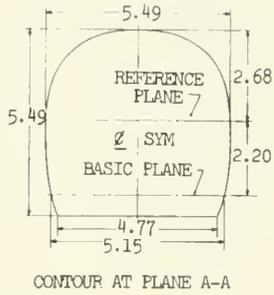
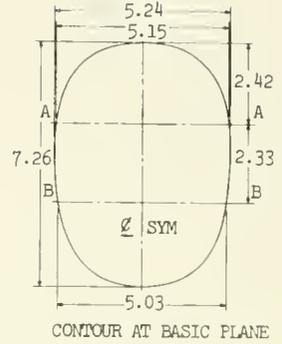
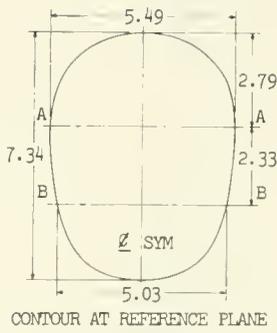
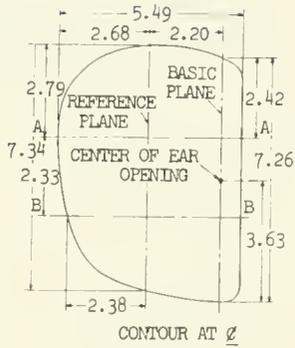
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HEADFORM A

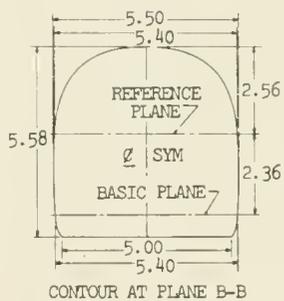
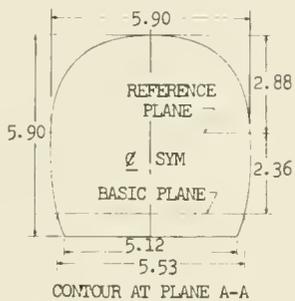
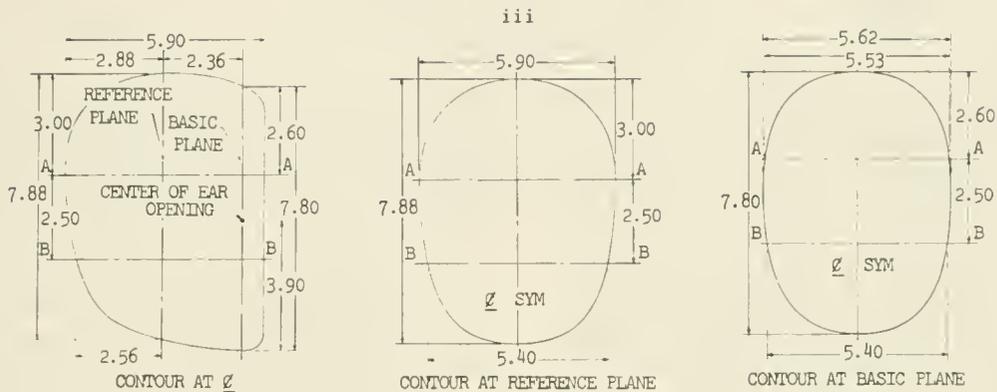
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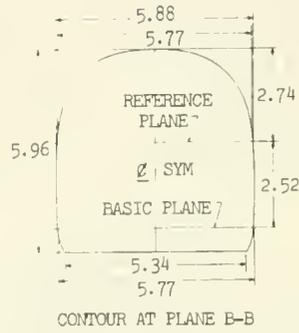
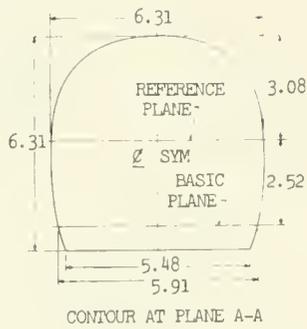
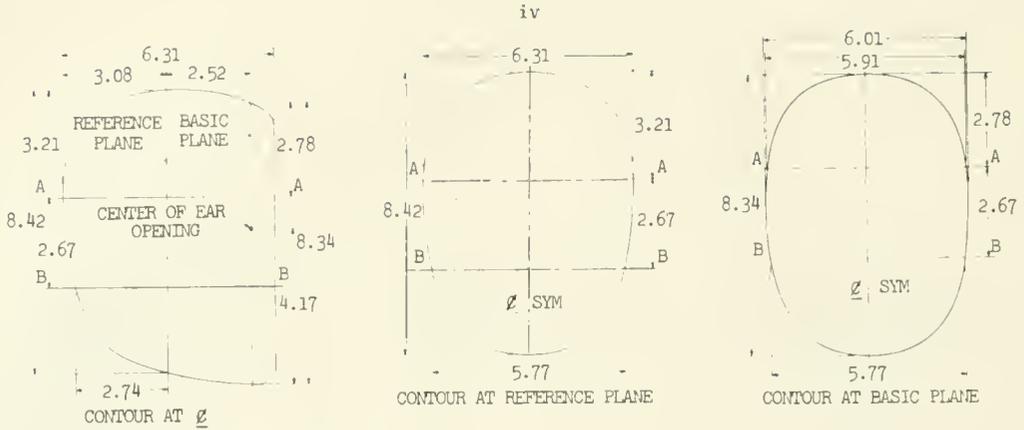
HEADFORM B

ALL DIMENSIONS IN INCHES



HEADFORM C

ALL DIMENSIONS IN INCHES



HEADFORM D

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38 F.R. 22390  
August 20, 1973

**PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 219****Windshield Zone Intrusion****(Docket No. 74-21; Notice 2)**

This notice establishes a new Motor Vehicle Safety Standard No. 219, 49 CFR 571.219, that regulates the intrusion of vehicle parts from outside the occupant compartment into a defined zone in front of the windshield during a frontal barrier crash test.

The notice of proposed rulemaking on which this issuance is based was issued on May 20, 1974 (39 F.R. 17768). An earlier notice had been issued on August 31, 1972 (37 F.R. 17763), proposing a standard that would prohibit penetration of the protected zone by any part of a vehicle outside of the occupant compartment during a 30-mph frontal impact into a fixed barrier. After further study and an analysis of comments submitted in response to that notice, the NHTSA determined that the initial rule was unnecessarily stringent since its near-total ban on intrusion had the effect of prohibiting entrance into the protected zone or contact with the windshield by small particles such as paint chips and glass which do not represent a danger to the vehicle occupants if they enter the zone and impact the windshield opening with a limited amount of force.

Consequently, in the notice published on May 20, 1974, the proposed standard on windshield zone intrusion was amended to permit penetration by particles, to a depth of no more than one-quarter inch into a styrofoam template in the shape of the protected zone and affixed to the windshield, during a 30-mph frontal barrier crash.

In addition, the amended proposal published May 20, 1974, provided that contact by vehicle parts with the windshield opening in the area below the protected zone, during a 30-mph barrier crash test, would not be prohibited provided

that the inner surface of that portion of the windshield is not penetrated. The procedure for determining the lower edge of the protected zone was also revised.

Standard No. 219, *Windshield Zone Intrusion*, reflects some minor changes incorporated for clarification following publication of the proposed rule on May 20, 1974. First, open-body-type vehicles with fold-down or removable windshields have been added to forward control vehicles as vehicle types to which the standard does not apply. A structurally unsupported windshield, essential to the utility of this vehicle type, typically does not remain in place during a 30-mph frontal barrier crash test, hence the test is impracticable for this type of vehicle.

In addition, the standard provides that its prohibitions against penetration by particles to a depth of more than one-quarter inch into the styrofoam template and penetration of the inner surface of the portion of the windshield below the protected zone do not apply to windshield molding and other components designed to be normally in contact with the windshield. This provision was contained in the proposed standard published August 31, 1972 but omitted from the proposal published May 20, 1974.

The standard as adopted also specifies that the 6.5-inch-diameter rigid sphere employed to determine the lower edge of the protected zone shall weigh 15 pounds, the approximate weight of the head and neck of an average driver or passenger.

Comments submitted by Wayne Corporation and Sheller-Globe Corporation, manufacturers of funeral coaches and ambulances, urged that the standard for windshield zone intrusion contain an exception for such vehicles in view of

the low incidence of accidents involving funeral coaches and ambulances, the low volume of production of such vehicles, and the high cost of barrier crash testing. The NHTSA has determined that these arguments are without merit. The manufacturers have presented no evidence to support the contention that funeral coaches and ambulances are involved in fewer accidents in proportion to their numbers than other vehicles. Furthermore, several comments criticizing the allegedly prohibitive costs of compliance with the standard appear to have erroneously assumed that every manufacturer must conduct barrier crash tests. The performance requirement for windshield zone intrusion is set out in S5. of the standard. A manufacturer of funeral coaches and ambulances may, for example, assure itself that the requirement is met by barrier crashing the conventional chassis which is a component of the special vehicle, modified to simulate the dynamic characteristics of the funeral coach or ambulance. Or, the manufacturer may use the design characteristic of the vehicle taking into account the modifications it makes, or information supplied by the chassis manufacturer.

Low volume of production is not an appropriate basis for an exemption. As the NHTSA has maintained in past proceedings where the same argument was advanced, the appropriate means to avoid application of a standard on

hardship grounds is a temporary exemption under 49 CFR Part 555.

Finally, the NHTSA is continuing to promote compatibility and economy in barrier crash testing by adopting vehicle loading and dummy restraint requirements in Standard No. 219 identical to those set out in proposed amendments to Standard No. 301, *Fuel System Integrity*, 49 CFR 571.301 (40 F.R. 17036, April 16, 1975). It has therefore required that 50th-percentile test dummies be placed in the seating positions whose restraint system is required to be tested by a dummy under Standard No. 208, *Occupant Crash Protection*, 49 CFR 571.208, and that they may be restrained only by the means that are installed in the vehicle at the respective seating positions.

In consideration of the foregoing, 49 CFR Part 571 is amended by the addition of a new Standard No. 219, 49 CFR 571.219, *Windshield Zone Intrusion*. . . .

*Effective date:* September 1, 1976.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 C.F.R. 1.51.)

Issued on June 9, 1975.

James B. Gregory  
Administrator

**40 F.R. 25462**  
**June 16, 1975**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 219

### Windshield Zone Intrusion

(Docket No. 74-21; Notice 3)

This notice responds to four petitions for reconsideration of the notice published June 16, 1975 (40 FR 25462), which established a new Motor Vehicle Safety Standard No. 219, *Windshield Zone Intrusion*, 49 CFR 571.219, regulating the intrusion of vehicle parts from outside the occupant compartment into a defined zone in front of the windshield during a frontal barrier crash test. The National Highway Traffic Safety Administration (NHTSA) hereby amends Standard No. 219 on the basis of the information and arguments presented by some of the petitioners.

Petitions for reconsideration were received from the Motor Vehicle Manufacturers Association (MVMA), General Motors, Ford, and Jeep. MVMA, General Motors, and Ford requested substitution of the term "daylight opening" for "windshield opening," and General Motors and Jeep requested a change in the effective date of Standard No. 219 from September 1, 1976 to September 1, 1977. In addition, Jeep requested that Standard No. 219 not become applicable until final issuance of Standard No. 212, *Windshield Mounting*, 49 CFR 571.212.

The NHTSA has determined that the petitions of MVMA, General Motors, and Ford requesting substitution of the term "daylight opening" for "windshield opening" have merit, and they are therefore granted. These petitioners requested that the term "windshield opening" be replaced by the term "daylight opening", which is defined in paragraph 2.3.12 of section E, Ground Vehicle Practice, SAE Aerospace-Automotive Drawing Standards, September, 1963. The part of the windshield below the daylight opening is protected by the cowl and instrument panel. There is little likelihood that

in a frontal crash any vehicle component will penetrate the cowl and instrument panel with sufficient force to pose a threat to the vehicle occupants. Therefore, the zone intrusion requirements of Standard No. 219 should only apply to the area of the windshield susceptible to actual penetration by vehicle components in a crash. Accordingly, the term "windshield opening" as it is used in Standard No. 219, is replaced by "daylight opening." The SAE definition of "daylight opening" has been slightly modified to reflect the particular characteristics of Standard No. 219.

The NHTSA has concluded that the petitions of General Motors and Jeep requesting a change in the effective date of Standard No. 219 should be granted in part and denied in part. The economic considerations involved in coordinating the effective date of Standard No. 219 with that of Standard No. 212, *Windshield Mounting*, justify postponement of the effective date to September 1, 1977, for application of Standard No. 219 to all vehicles except passenger cars. However, the effective date of September 1, 1976, will be retained for passenger cars because of their greater susceptibility to the intrusion of vehicle parts against which this standard is designed to protect. This postponement of effective dates also grants in part Jeep's petition requesting that the applicability of Standard No. 219 be postponed until final issuance of Standard No. 212.

In consideration of the foregoing, § 571.219 is amended by revising S4., S5., and S6.1(d) of Standard No. 219, *Windshield Zone Intrusion*, to read as follows:

*Effective date:* September 1, 1976, for passenger cars; September 1, 1977, for multipurpose

Effective: September 1, 1976  
September 1, 1977

passenger vehicles, trucks, and buses with a GVWR of 10,000 pounds or less.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on November 10, 1975.

James B. Gregory  
Administrator

**40 F.R. 53033**  
**November 14, 1975**

## MOTOR VEHICLE SAFETY STANDARD NO. 219

### Windshield Zone Intrusion

**S1. Scope.** This standard specifies limits for the displacement into the windshield area of motor vehicle components during a crash.

**S2. Purpose.** The purpose of this standard is to reduce crash injuries and fatalities that result from occupants contacting vehicle components displaced near or through the windshield.

**S3. Application.** This standard applies to passenger cars, and to multipurpose passenger vehicles, trucks and buses of 10,000 pounds or less gross vehicle weight rating. However, it does not apply to forward control vehicles or open-body-type vehicles with fold-down or removable windshields.

#### S4. Definitions.

["Daylight Opening" (DLO) means the maximum unobstructed opening through the glazing surface, including reveal or garnish moldings adjoining the surface, as measured parallel to the outer surface of the glazing material. (40 F.R. 53033—November 14, 1975. Effective: 9/1/76 & 9/1/77)"]

"Windshield opening" means the outer surface of the windshield glazing material.

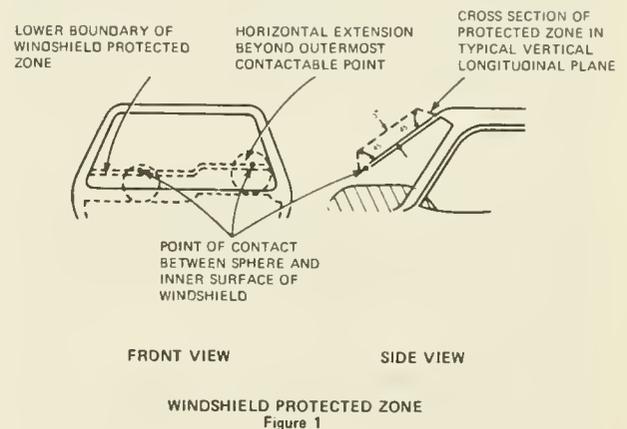
**S5. Requirement.** [When the vehicle traveling longitudinally forward at any speed up to and including 30 mph impacts a fixed collision barrier that is perpendicular to the line of travel of the vehicle, under the conditions of S7, no part of the vehicle outside the occupant compartment, except windshield molding and other components designed to be normally in contact with the windshield, shall penetrate the protected zone template, affixed according to S6, to a depth of more than one-quarter inch, and no such part of a vehicle shall penetrate the inner surface of that portion of the windshield, within the DLO, below the protected zone defined in S6. (40 F.R.

53033—November 14, 1975. Effective: 9/1/76 & 9/1/77)"]

#### S6. Protected zone template.

**S6.1** The lower edge of the protected zone is determined by the following procedure (see Figure 1).

(a) Place a 6.5-inch diameter rigid sphere, weighing 15 pounds, in a position such that it simultaneously contacts the inner surface of the



windshield glazing and the surface of the instrument panel, including padding. If any accessories or equipment such as the steering control system obstruct positioning of the sphere, remove them for the purposes of this procedure.

(b) Draw the locus of points on the inner surface of the windshield contactable by the sphere across the width of the instrument panel. From the outermost contactable points, extend the locus line horizontally to the edges of the glazing material.

(c) Draw a line on the inner surface of the windshield below and one-half inch distant from the locus line.

(d) [The lower edge of the protected zone is the longitudinal projection onto the outer surface of the windshield of the line determined in S6.1(c). (40 F.R. 53033—November 14, 1975. Effective: 9/1/76 & 9/1/77)]

**S6.2** The protected zone is the space enclosed by the following surfaces, as shown in Figure 1:

(a) [The outer surface of the windshield in its precrash configuration. (40 F.R. 53033—November 14, 1975. Effective: 9/1/76 & 9/1/77)]

(b) [The locus of points 3 inches outward along perpendiculars drawn to each point on the outer surface of the windshield. (40 F.R. 53033—November 14, 1975. Effective: 9/1/76 & 9/1/77)]

(c) [The locus of lines forming a 45° angle with the outer surface of the windshield at each point along the top and side edges of the outer surface of the windshield and the lower edge of the protected zone determined in S6.1, in the plane perpendicular to the edge at that point. (40 F.R. 53033—November 14, 1975. Effective: 9/1/76 & 9/1/77)]

**S6.3** A template is cut or formed from Styrofoam, type DB, cut cell, to the dimensions of the zone as determined in S6.2. The template is affixed to the windshield so that it delineates the protected zone and remains affixed throughout the crash test.

**S7. Test conditions.** The requirement of S5 shall be met under the following conditions:

**S7.1** The protected zone template is affixed to the windshield in the manner described in S6.

**S7.2** The hood, hood latches, and any other hood retention components are engaged prior to the barrier crash.

**S7.3** Adjustable cowl tops or other adjustable panels in front of the windshield are in the position used under normal operating conditions when windshield wiping systems are not in use.

**S7.4** The parking brake is disengaged and the transmission is in neutral.

**S7.5** Tires are inflated to the vehicle manufacturer's specifications.

**S7.6** The fuel tank is filled to any level from 90 to 95 percent of capacity.

**S7.7** The vehicle, including test devices and instrumentation, is loaded as follows:

(a) Except as specified in S7.6, a passenger car is loaded to its unloaded vehicle weight plus its rated cargo and luggage capacity weight, secured in the luggage area, plus a 50th-percentile test dummy as specified in Part 572 of this chapter at each front outboard designated seating position and at any other position whose protection system is required to be tested by a dummy under the provisions of Standard No. 208. Each dummy is restrained only by means that are installed for protection at its seating position.

(b) Except as specified in S7.6, a multipurpose passenger vehicle, truck or bus is loaded to its unloaded vehicle weight, plus 300 pounds or its rated cargo and luggage capacity, whichever is less, secured to the vehicle, plus a 50th-percentile test dummy as specified in Part 572 of this chapter at each front outboard designated seating position and at any other position whose protection system is required to be tested by a dummy under the provisions of Standard No. 208. Each dummy is restrained only by means that are installed for protection at its seating position. The load is distributed so that the weight on each axle as measured at the tire-ground interface is in proportion to its GAWR. If the weight on any axle when the vehicle is loaded to its unloaded vehicle weight plus dummy weight exceeds the axle's proportional share of the test weight, the remaining weight is placed so that the weight on that axle remains the same. For the purposes of this section, unloaded vehicle weight does not include the weight of work-performing accessories.

**40 F.R. 25462**  
**June 16, 1975**

## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 220

### School Bus Rollover Protection

(Docket No. 75-2; Notice 2)

This notice establishes a new motor vehicle safety Standard No. 220, *School Bus Rollover Protection*, 49 CFR 571.220, specifying performance requirements for the structural integrity of the passenger compartment of school buses when subjected to forces that can be encountered in rollovers.

The Motor Vehicle and Schoolbus Safety Amendments of 1974 (the Act) mandate the issuance of Federal motor vehicle safety standards for several aspects of school bus performance, including crashworthiness of the vehicle body and frame. Pub. L. 93-942, section 202 (15 U.S.C. 1392(i)(1)(A)). Based on this mandate and on bus body crashworthiness research (DOT-HS-046-3-694), the NHTSA proposed rollover protection requirements for school buses (40 F.R. 8570, February 28, 1975). Citing statistics on the safety record of school bus operation, several manufacturers questioned whether any standard for school bus rollover protection could be justified.

The Act reflects a need, evidenced in correspondence to the NHTSA from the public, to protect the children who ride in school buses. They and their parents have little direct control over the types of vehicles in which they ride to school, and are not in a position to determine the safety of the vehicles. It is for this reason that the school bus standards must be effective and meaningful.

At the same time, the safety history of school buses does not demonstrate that radical modification of school bus structure would substantially decrease occupant death and injury. As noted in the "School Bus Safety Improvement Program" contract conducted by Ultrasystems, Inc., (DOT-HS-046-3-694) for the NHTSA:

"School buses are a relatively safe mode of human transportation. School bus accident rates and injury/fatality rates on a per-vehicle, per-vehicle-mile, per-passenger-mile, or per-passenger basis are significantly less than for other passenger vehicles. Accidents to school children while enroute to and from school occur primarily in modes other than as school bus passengers. However, school bus safety can and should be improved."

As a practical matter, the amount of structural modification called for in this standard is also limited as a result of the 9-month lead time available to implement the provisions of each school bus standard after its promulgation. The various new requirements imposed in response to the mandate of the Act will require considerable effort by school bus manufacturers to bring their products into conformity in the 9-month period.

The Physicians for Automotive Safety, The National Transportation Safety Board, the Home Insurance Company and other commenters suggested that the NHTSA had ignored the recommendations of the report submitted by Ultrasystems on school bus improvement. The report concluded that the improved school bus design tested by Ultrasystems could withstand a significantly greater load for the same amount of roof crush than existing school bus designs.

In fact, the NHTSA evaluated the test results and Ultrasystem's recommendations carefully. While the percentage of reduction of roof crush would be substantial as a result of the recommended design change, no relationship of this decrease in deflection to improved safety for occupants was established. Ultrasystems reported that increases of \$500 in cost and 530 pounds were incurred to achieve several improve-

ments, including those of the vertical roof crush test.

The recommendations also implied increased structural rigidity but did not evaluate its effect on the amount of energy absorbed by vehicle occupants in a crash. Also, Ultrasystems, did not consider the problems of lead time and retooling costs in making its recommendations. The NHTSA continues to consider that its proposal of  $5\frac{1}{8}$  inches of maximum roof crush under a load equal to  $1\frac{1}{2}$  times the vehicle's unloaded weight provides a satisfactory level of occupant crash protection. Available data do not support the conclusion that a 2- or 3-inch reduction of this crush would significantly improve the level of passenger safety in school buses. It is the intention of the NHTSA to continually review accident statistics relating to school bus safety. Accordingly, future upgrading of the standard will be considered should such action be warranted based upon availability of appropriate data.

In response to inquiries from the Motor Vehicle Manufacturers Association and General Motors as to the origin of the  $5\frac{1}{8}$ -inch requirement, the limit is drawn from the existing School Bus Manufacturers Institute requirement for school bus structural integrity (Static Load Test Code for School Bus Body Structure, issued by the School Bus Manufacturers Institute).

In adopting the  $5\frac{1}{8}$ -inch limit found in the present industry standard, the NHTSA is not merely preserving the status quo. While a manufacturer may have designed its products to meet the industry standard in the past, certain of its products presumably performed either better or worse than the nominal design. Conformity to NHTSA standards, in contrast, requires that every vehicle be capable of meeting the  $5\frac{1}{8}$ -inch limit. This means that the manufacturer must design its vehicles to meet a higher level of performance, to provide a compliance margin for those of its products which fall below the nominal design level. Of course, the manufacturer can reduce the compliance-margin problem without redesign by improving the consistency of its manufacturing processes.

The standard requires that, upon the application of vertical downward force to the bus roof equal to  $1\frac{1}{2}$  times the vehicle's unloaded weight,

the vehicle roof shall not crush more than  $5\frac{1}{8}$  inches, and the emergency exits shall be capable of being opened, with the weight applied, and after its release. The National Transportation Safety Board, the Vehicle Equipment Safety Commission (VESC), Mercedes-Benz, and the Action for Child Transportation Safety organization suggested other methods for evaluation of crashworthiness. The NHTSA has considered these, but concludes that the static test specified in this standard provides a reasonable means to determine crashworthiness without unnecessary testing expense.

Based on submitted comments, the standard varies in some respects from the proposal. The sizes of the force application plates used to apply force and the method of application have been revised to simplify the test procedures and equipment, and to spread the force over larger areas of the vehicle roofs of large and small vehicles. The proposal specified a rigid, rectangular force application plate 36 inches wide and 20 inches shorter than the vehicle roof, preventing reliance on the roof end structures for rollover protection in typical body-on-chassis construction. Commenters pointed out that the end structures of the roof are almost certain to bear the weight of a rollover and should be included in a test of a vehicle's crashworthiness. Several manufacturers and other commenters recommended an increase in the size of the force application plate, in order to permit the foremost and rearmost roof "bows" of their buses to absorb a portion of the test load. Ford Motor Company stated it had performed the test as proposed and asserted that the roof of its van-type vehicle, as presently designed could not meet the requirement without an increase in the size of the force application plate to distribute the load over the entire vehicle roof. Chrysler Corporation stated it would find it necessary to discontinue production of small school buses because of redesign costs if the requirements were adopted as proposed.

With a view to the safety record of school buses and the 9-month lead time, the NHTSA concludes that the force application plate can be modified so that an additional "bow" or "bows" bear part of the applied force. It is the NHTSA's view that a change to permit both

roof end structures to fully contribute to support of the applied force in the case of buses of more than 10,000 pounds would be a relaxation of current industry practices. Accordingly, the extent of change recommended by the industry is not adopted. The NHTSA concludes that an 8-inch increase in the length of the force application plate is sufficient to allow some portion of the applied force to be absorbed by the end bows of the roof while maintaining adequate crash protection. Therefore, for these buses the width of the plate remains as proposed while the length of the plate is increased 8 inches.

In the case of lighter buses, which are generally of the van type, the NHTSA has increased both the width and length of the plate to encompass the entire roof.

The procedure for applying force through the plate has also been modified in some respects. Many comments objected that the procedure required an expensive, complex hydraulic mechanism that would increase the costs of compliance without justification. The proposal specified an "evenly-distributed vertical force in a downward direction through the force application plate", starting with the plate horizontal. Commenters interpreted these specifications to mean that the vehicle would be required to absorb the energy in evenly-distributed fashion and that the horizontal attitude of the plate must be maintained.

Actually these specifications were included in the proposed method to advise manufacturers of the precise procedures to be employed in compliance testing of their products. Understanding that some manufacturers may choose to achieve the required force application by applying weights evenly over the surface of the plate, the standard specified an "evenly-distributed force" to eliminate other methods (such as a concentrated force at one end of the plate) that could unfairly test the vehicle structure. The horizontal attitude of the plate was also intended to establish a beginning point for testing on which a manufacturer can rely. While these specifications establish the exact circumstances under which vehicles can be tested, a manufacturer can depart from them as long as it can be shown that the vehicle would comply if tested exactly as specified. In place of the perfectly rigid plate called for in the standard, for example, a manu-

facturer could employ a plate of sufficient stiffness to ensure that the test results are not affected by the lack of rigidity.

Some modification of the test procedures has been made for simplification and clarity. To permit placement of the plate on the roof to begin testing without a suspension mechanism, the specification for horizontal attitude is modified to permit the plate to depart from the horizontal in the fore and aft direction only. Some manufacturers considered the initial application of force as an unnecessary complication. However, the initial force application of 500 pounds has been retained in order to permit elimination of inconsequential deformation of the roof structure prior to measurement of the permissible  $5\frac{1}{8}$  inches of deflection. In instances where the force application plate weighs more than 500 pounds, some type of suspension mechanism could be used temporarily to constrain the load level to the initial value, if the manufacturer decides to conduct his testing exactly as specified in the standard's procedures.

The requirement that force be applied "through the plate" has been changed to "to the plate" in order to avoid a misunderstanding that the vehicle must absorb energy evenly over the surface of its roof.

As proposed by several commenters, the rate of application in pounds per minute has been changed to inches per second, specifically "at any rate not more than  $\frac{1}{2}$  inch per second." Manufacturers should understand that "any" in this context is defined by the NHTSA (49 CFR § 571.4) to mean that the vehicle roof must satisfy the requirement at every rate of application within the stated range. General Motors reports that as a practical matter, the effect of speed in rate of application for tests of this nature is not significant in the range of 0.12 inches per second to 1 inch per second.

The requirement that movement "at any point" on the plate not exceed  $5\frac{1}{8}$  inches has not been modified despite some objections. The NHTSA considers it reasonable that excessive crush not be permitted at the extremities of the plate. Measurement of movement only at the center of the plate, for example, would permit total collapse of the structure in any direction as long as one point on the bus maintained its integrity.

The preparation of the vehicle for the application of force has been modified to specify replacement of non-rigid body mounts with equivalent rigid mounts. The compression of deformable body mounts is unrelated to crash-worthiness of the structure and can therefore be eliminated to permit testing of the structure itself.

Accessories or components which extend upward from the vehicle's roof (such as school bus lights) are removed for test purposes. It is also noted that the vehicle's transverse frame members or body sills are supported for test purposes. In response to a question from Blue Bird Body Company, a frame simulator may be used along with any other variations as long as the manufacturer assures himself that the vehicle would conform if tested precisely as specified in the standard.

The vehicle's emergency exits must also be capable of opening when the required force is applied, and following release of the force. As noted in comments, this requirement simulates the use of the exits after a rollover, whether or not the vehicle comes to rest on its roof. The proposed requirement of ability to close these exits is eliminated because such a capability is unnecessary in an emergency evacuation of the bus. For this reason, the requirement has been modified so that a particular test specimen (*i.e.*, a particular bus) will not be required to meet requirements for emergency exits which open following release of force, if the exits have already been tested while the application force is maintained.

With regard to the requirements as a whole, Crown Coach and other manufacturers argued that the application of  $1\frac{1}{2}$  times the vehicle's unloaded weight unfairly discriminates against buses with a higher vehicle weight-to-passenger ratio. The NHTSA disagrees, and notes that the relevant consideration in rollover is the weight of the vehicle itself in determining the energy to be absorbed by the structure. In a related area, one manufacturer suggested that the increased weight of the NHTSA's contemplated new standards for school buses would increase unloaded vehicle weight to the point where redesign would be required to meet the rollover standard. The NHTSA has considered this

issue and estimates that the only significant new weight would be for improved seating. This weight increase would not substantially increase the severity of the rollover standard.

The State of California suggested consolidation of the rollover standard with the joint strength. While such a consolidation would appear logical for school buses alone, the NHTSA prefers the flexibility of separate standards with a view to their use independently in the future for other vehicle types. For example, the application of vertical force to the vehicle structure may be appropriate in a vehicle for which the joint strength requirement would not be appropriate.

The State of Georgia requested that transit systems transporting school children be exempted from Standard No. 220. This commenter apparently misunderstood the applicability of the standard. It only applies to newly-manufactured vehicles and does not require modification of existing fleets, whether or not operated by a transit authority.

Interested persons should note that the NHTSA has issued a proposal to modify the definition of "school bus" (40 F.R. 40854, September 1, 1975) and that if that definition is adopted the requirements of this standard will apply to all vehicles that fall within the definition, whether or not they fall within the present definition.

In consideration of the foregoing, a new motor vehicle safety standard No. 220, *School Bus Rollover Protection*, is added as § 571.220 of Part 571 of Title 49, Code of Federal Regulations. . . .

*Effective date:* October 26, 1976.

The effective date of this standard is established as 9 months after the date of its issuance, as required by the Motor Vehicle and Schoolbus Safety Amendments of 1974, Pub. L. 93-492, section 202 (15 U.S.C. 1397(i)(1)(A)).

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); § 202, Pub. L. 93-492, 88 Stat. 1470 (15 U.S.C. 1392); delegation of authority at 49 CFR 1.51)

Issued on January 22, 1976.

Howard J. Dugoff  
Acting Administrator  
41 F.R. 3874  
January 27, 1976

## MOTOR VEHICLE SAFETY STANDARD NO. 220

### School Bus Rollover Protection

**S1. Scope.** This standard establishes performance requirements for school bus rollover protection.

**S2. Purpose.** The purpose of this standard is to reduce the number of deaths and the severity of injuries that result from failure of the school bus body structure to withstand forces encountered in rollover crashes.

**S3. Applicability.** This standard applies to school buses.

**S4. Requirements.** When a force equal to  $1\frac{1}{2}$  times the unloaded vehicle weight is applied to the roof of the vehicle's body structure through a force application plate as specified in S5., Test procedures—

(a) The downward vertical movement at any point on the application plate shall not exceed  $5\frac{1}{8}$  inches; and

(b) Each emergency exit of the vehicle provided in accordance with Standard No. 217 (§ 571.217) shall be capable of opening as specified in that standard during the full application of the force, and after release of the force. A particular vehicle (*i.e.*, test specimen) need not meet the emergency exit opening requirement after release of force if it is subjected to the emergency exit opening requirements during the full application of the force.

**S5. Test procedures.** Each vehicle shall be capable of meeting the requirements of S4, when tested in accordance with the procedures set forth below.

**S5.1** With any non-rigid chassis-to-body mounts replaced with equivalent rigid mounts, place the vehicle on a rigid horizontal surface so that the vehicle is entirely supported by means of the vehicle frame. If the vehicle is

constructed without a frame, place the vehicle on its body sills. Remove any components which extend upward from the vehicle roof.

**S5.2** Use a flat, rigid, rectangular force application plate that is measured with respect to the vehicle roof longitudinal and lateral centerlines.

(a) In the case of a vehicle with a GVWR of more than 10,000 pounds, 12 inches shorter than the vehicle roof and 36 inches wide; and

(b) In the case of a vehicle with a GVWR of 10,000 pounds or less, 5 inches longer and 5 inches wider than the vehicle roof. For purposes of these measurements, the vehicle roof is that structure, seen in the top projected view, that coincides with the passenger and driver compartment of the vehicle.

**S5.3** Position the force application plate on the vehicle roof so that its rigid surface is perpendicular to a vertical longitudinal plane and it contacts the roof at not less than two points, and so that, in the top projected view, its longitudinal centerline coincides with the longitudinal centerline of the vehicle, and its front and rear edges are an equal distance inside the front and rear edges of the vehicle roof at the centerline.

**S5.4** Apply an evenly-distributed vertical force in the downward direction to the force application plate at any rate not more than 0.5 inch per second, until a force of 500 pounds has been applied.

**S5.5** Apply additional vertical force in the downward direction to the force application plate at a rate of not more than 0.5 inch per second until the force specified in S4 has been applied, and maintain this application of force.

**S5.6** Measure the downward movement of any point on the force application plate which occurred during the application of force in accordance with S5.5.

**S5.7** To test the capability of the vehicle's emergency exits to open in accordance with S4(b)—

(a) In the case of testing under the full application of force, open the emergency exits as specified in S4(b) while maintaining the force applied in accordance with S5.4 and S5.5; and

(b) In the case of testing after the release of all force, release all downward force applied to

the force application plate and open the emergency exits as specified in S4(b).

**S6. Test conditions.** The following conditions apply to the requirements specified in S4.

**S6.1 Temperature.** The ambient temperature is any level between 32° F. and 90° F.

**S6.2 Windows and doors.** Vehicle windows, doors, and emergency exits are in fully-closed position, and latched but not locked.

**41 F.R. 3874**

**January 27, 1976**

## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 221

### School Bus Body Joint Strength

(Docket No. 73-34; Notice 3)

This notice establishes a new motor vehicle safety standard, No. 221; *School Bus Body Joint Strength*, 49 CFR 571.221, specifying a minimum performance level for school bus body panel joints.

The Motor Vehicle and Schoolbus Safety Amendments of 1974 (Pub. L. 93-492, 88 Stat. 1470, herein, the Act) require the issuance of minimum requirements for school bus body and frame crashworthiness. This rulemaking is pursuant to authority vested in the Secretary of Transportation by the Act and delegated to the Administrator of the NHTSA, and is preceded by notices of proposed rulemaking issued January 29, 1974 (39 F.R. 2490) and March 13, 1975 (40 F.R. 11738).

One of the significant injury-producing characteristics of school bus accidents, exposure to sharp metal edges, occurs when body panels become separated from the structural components to which they have been fastened. In an accident severe lacerations may result if the occupants of the bus are tossed against these edges. Moreover, if panel separation is great the component may be ejected from the vehicle, greatly increasing the possibility of serious injury.

This standard is intended to lessen the likelihood of these modes of injury by requiring that body joints on school buses have a tensile strength equal to 60 percent of the tensile strength of the weakest joined body panel, as suggested by the Vehicle Equipment Safety Commission (VESC). The NHTSA has determined that this is an appropriate level of performance for body joints and that its application to school buses is both reasonable and practicable. Furthermore, the NHTSA believes that adoption

of this standard will provide an effective and meaningful solution to the body panel problem.

It is anticipated that this rule will burden manufacturers only to the extent of requiring the installation of more rivets than are currently used. The NHTSA has reviewed the economic and environmental impact of this proposal and determined that neither will be significant.

In their response to the two NHTSA proposals on this subject, several of the commenters suggested that the standard could be met by reducing the strength of the panel rather than increasing the strength of the joint, and that a minimum joint strength should be required. For several reasons the NHTSA does not believe that a minimum absolute joint strength is desirable at this time. While this standard will tend to increase the overall strength of buses, it is not designed to set minimum body panel strength requirements. Its purpose is to prevent panels from separating at the joint in the event of an accident. In order to deal with the problem of laceration, this regulation must be applicable to both exterior and interior joints. An absolute minimum joint strength requirement would be constrained by the level of performance appropriate for the relatively thin interior panels. Thus, the overall level of performance could not be defined in a meaningful fashion without severely and unnecessarily limiting the manufacturer's flexibility in designing his product. The NHTSA School Bus Rollover Protection Standard (49 CFR 571.220), which specifies requirements for the structural integrity of school bus bodies, should result in a practical lower limit on panel strength and thereby set a practical absolute minimum joint strength.

The NHTSA has no evidence that the mode of failure found in the larger traditional school buses also occurs in smaller, van-type school buses currently manufactured by automobile manufacturers for use as 11- to 17-passenger school buses. Ford Motor Company commented that the mode of injury sought to be prevented by this standard does not occur in accidents involving school buses converted from multipurpose passenger vehicles (vans). Chrysler Corporation suggested that the proposed requirement is inappropriate when applied to vans with "coach" joint construction. Based on these comments, the NHTSA has determined that until information to the contrary appears or is developed these vehicles should not be covered by the requirement. Accordingly, the application of the standard has been limited to school buses with a gross vehicle weight rating over 10,000 pounds.

Several commenters suggested that certain types of joints might not be susceptible of testing in the manner specified in this regulation. Up to this time the NHTSA has not found sufficient evidence in support of that position to justify amending the standard. If information is re-

ceived indicating that different test methods are required for certain applications, appropriate action will be initiated.

In consideration of the foregoing, a new motor vehicle safety standard, No. 221, *School Bus Body Joint Strength*, is added as § 571.221 of Part 571 of Title 49, Code of Federal Regulations, as set forth below.

*Effective date:* October 26, 1976.

The effective date of this standard is 9 months after the date of issuance, as required by the Motor Vehicle and Schoolbus Safety Amendments of 1974, Pub. L. 93-492, section 202 (15 U.S.C. 1397(i)(1)(A)).

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); § 202, Pub. L. 93-492, 88 Stat. 1470 (15 U.S.C. 1392); delegation of authority at 49 CFR 1.50.)

Issued on January 22, 1976.

Howard J. Dugoff  
Acting Administrator

**41 F.R. 3872**  
**January 27, 1976**



**S6.2 Determination of minimum allowable strength.** For purposes of determining the minimum allowable joint strength, determine the tensile strengths of the joined body components as follows:

(a) If the mechanical properties of a material are specified by the American Society for Testing and Materials, the relative tensile strength for such a material is the minimum tensile strength specified for that material in the 1973 edition of the Annual Book of ASTM Standards.

(b) If the mechanical properties of a material are not specified by the American Society for Testing and Materials, determine its tensile strength by cutting a specimen from the bus body outside the area of the joint and by testing it in accordance with S6.3.

**S6.3 Strength test.**

**S6.3.1** Grip the joint specimen on opposite sites of the joint in a tension testing machine calibrated in accordance with Method E4, Verification of Testing Machines, of the American Society for Testing and Materials (1973 Annual Book of ASTM Standards).

**S6.3.2** Adjust the testing machine grips so that the joint, under load, will be in stress approximately perpendicular to the joint.

**S6.3.3** Apply a tensile force to the specimen by separating the heads of the testing machine at any uniform rate not less than  $\frac{1}{8}$  inch and not more than  $\frac{3}{8}$  inch per minute until the specimen separates.

**41 F.R. 3872  
January 27, 1976**

## PREAMBLE TO MOTOR VEHICLE SAFETY STANDARD NO. 222

### School Bus Seating and Crash Protection

(Docket No. 73-3; Notice 5)

This notice establishes a new motor vehicle safety Standard No. 222, *School Bus Seating and Crash Protection*, that specifies seating, restraining barrier, and impact zone requirements for school buses.

The Motor Vehicle and Schoolbus Safety Amendments of 1974, Pub. L. 93-492, directed the issuance of a school bus seating systems performance standard (and other standards in seven areas of vehicle performance). The NHTSA had already issued two proposals for school bus seating systems prior to enactment of the 1974 Safety Amendments (the Act) (38 F.R. 4776, February 22, 1973) (39 F.R. 27585, July 30, 1974) and subsequently published two additional proposals (40 F.R. 17855, April 23, 1975) (40 F.R. 47141, October 8, 1975). Each aspect of the requirements was fully considered in the course of this rulemaking activity. Comments received in response to the most recent proposal were limited to a few aspects of the Standard.

The largest number of comments were received on the requirement that school bus passenger seats be equipped with seat belt anchorages at each seating position. The standard relies on compartmentalization between well-padded and well-constructed seats to provide occupant protection on school buses (other than van-type buses). At the same time, seat belt anchorages were proposed so that a greater measure of protection could be gained if a particular user chose to use the anchorages by installation of seat belts together with a system to assure that seat belts would be worn, properly adjusted, and not misused.

Bus operators strongly expressed the view that the presence of seat belt anchorages would encourage the installation of seat belts by school

districts without providing the necessary supervision of their use. This association of school bus operators (National School Transportation Association) also questioned the benefits that would be derived from anchorage installation as long as their utilization is not required. In view of these factors, and the indications that in any event only a small fraction of school buses would have belts installed and properly used, the NHTSA concludes that the proposed seat belt anchorage requirement should not be included in this initial school bus seating standard. Further study of the extent to which belts would be installed and properly used should permit more certainty as the basis for any future action.

NHTSA calculations demonstrate that the strength characteristics of the seat specified by the standard to provide the correct amount of compartmentalization also provide the strength necessary to absorb seat belt loads. This means that an operator or school district may safely attach seat belts to the seat frame, even where anchorages are not installed as original equipment. The seat is strong enough to take the force of occupants against the seat back if no belts are utilized, or the force of occupants against seat belts if occupants are restrained by belts attached to the seat frame through the anchorages provided.

The Physicians for Automotive Safety (PAS) requested that lap belts be required in addition to the compartmentalization offered by the seating systems. The agency concluded earlier in this rulemaking procedure that compartmentalization provides satisfactory protection and that a requirement for belts without the assurance of proper supervision of their use would not be an effective means of providing occupant protection.

PAS has not provided data or arguments that would modify this conclusion, and its request is therefore denied.

PAS, relying on testing undertaken at the University of California at Los Angeles in 1967 and 1969, argued that a vertical seat back height of 24 inches above the seating reference point (SRP) is necessary to afford adequate protection against occupant injury. The NHTSA, as noted in its fourth notice of school bus crash protection, based its 20-inch requirement on newer data generated in dynamic and static testing by AMF Corporation of prototype seats designed to meet the proposed requirements of the standard ("Development of a Unitized School Bus", DOT-HS-400969). While the NHTSA does not dispute that a properly constructed, higher seat back provides more protection than a lower seat back, the data support the agency's determination that the 20-inch seat back provides a reasonable level of protection. School bus accident data do not provide substantial evidence of a whiplash injury experience that could justify a 4-inch increase in seat back height. For this reason, the seat back height is made final as proposed.

Several commenters objected to applicability of the standard to school buses with a gross vehicle weight rating (GVWR) of 10,000 pounds or less (light school buses), asserting that the special requirements of the standard for those buses were inappropriate, or unachievable within the 9-month leadtime for compliance mandated by the Act.

Chrysler Corporation requested exclusion of light school buses from this standard for an indefinite period, and Ford Motor Company requested that essentially the same package of standards as already are provided in its van-type multi-purpose passenger vehicles and school bus models be required in the future, with no additional protection. Both companies believe that the relatively small numbers of their vehicles sold as school buses would have to be withdrawn from the market because of the expense of tooling new seating that offers more crash protection than present seating. Wayne Corporation manufactures a light school bus that is not based on a van-type vehicle, and requested that seats used

in its larger models be permitted in smaller models, along with seat belts that comply with Standard No. 209.

The Congressional direction to issue standards for school bus seating systems (15 U.S.C. § 1392(i)(1)(A)(iv)) implies that existing seating and occupant crash protection standards are insufficient for vehicles that carry school children. The NHTSA has proposed a combination of requirements for light school buses that differ from those for heavier buses, because the crash pulse experienced by smaller vehicles is more severe than that of larger vehicles in similar collisions. The standard also specifies adequate numbers of seat belts for the children that the vehicle would carry, because such restraints are necessary to provide adequate crash protection in small vehicles. The requirements applicable to light school buses are considered reasonable, and are therefore included in the final rule as proposed.

In Wayne's case, it is not clear why the seat it has developed for heavier school buses will not serve in its smaller school buses. Seat belts may need to be attached to the floor to support the force specified by Standard No. 210 for anchorages. Also, some interior padding may be necessary to meet the vehicle impact zone requirements of S5.3.1.1(a).

Sheller-Globe Corporation (Sheller) and Wayne considered unreasonable the standard's limitation on maximum distance between a seat's SRP and the rear surface of the seat or restraining barrier forward of the SRP (S5.2). The limitation exists to minimize the distance an occupant travels before forward motion is arrested by the padded structure that compartmentalizes the occupant. The two bus manufacturers contend that they must also comply with State requirements for a minimum distance between seats that results in only 1 inch of tolerance in seating placement.

Section 103(d) of the National Traffic and Motor Vehicle Safety Act provides in part:

(d) Whenever a Federal motor vehicle safety standard . . . is in effect, no State or political subdivision of a State shall have any authority either to establish or continue in effect, with respect to any motor vehicle or item of motor vehicle equipment any safety standard appli-

cable to the same aspect of performance of such vehicle or item of equipment which is not identical to the Federal standard.

It is the opinion of the NHTSA that any State requirement relating to seat spacing, other than one identical to the Federal requirement for maximum spacing of 20 inches from the SRP, is preempted under § 103(d), 15 U.S.C. § 1392(d).

Sheller advocated wider seat spacing for activity buses, because seats are occupied for longer periods of time on road trips. The NHTSA, noting that activity buses are often used on the open highway at high speeds for long periods of time, requests comments on the advisability of specifying a seat belt requirement in place of the seat spacing requirement in the case of these buses.

Much of Sheller and Wayne's concern over tolerances may stem from a misunderstanding of the meaning of "seating reference point" (SRP). As defined by the NHTSA (49 CFR 571.3), the SRP is essentially the manufacturer's design reference point which simulates the pivot center of the human torso and thigh, located in accordance with the SAE Standard J826. Thus the manufacturer calculates, on its seat design seen in side projected view, the pivot center of the human torso and thigh of the potential seat occupant, and then establishes a design reference point that simulates the location of the actual pivot center. The NHTSA has interpreted that this design reference point may be fixed by the manufacturer with reference to the seating structure to simplify calculation of its location in a bus for purposes of measurement and compliance.

Sheller also requested that the "seat performance forward" testing be simplified by eliminating the 8-inch range of locations at which the lower loading bar can be applied against the seat back. As noted in the preamble to Notice 4 of this docket in response to a similar request from Blue Bird Body Company, the NHTSA declines to make this restriction, to discourage the addition of a narrow 2-inch wide structural member at this point simply to meet the requirement. This reasoning remains valid and Sheller's request is denied.

Sheller also asked that the requirement for forward-facing seats be eliminated from the standard, in view of the practice of installing side-facing seats in some buses for handicapped students. The NHTSA designed the seating system in this standard for protection from fore and aft crash forces, and considers it necessary that the seats be forward-facing to achieve the objective of occupant protection. Comments are solicited on whether the provision of this protection in special vehicles is impractical.

The Vehicle Equipment and Safety Commission (VESC) asked for a minimum seat width of 13 inches for each designated seating position, noting that the standard's formula permits seating of 12.67 inches in width. The agency does not believe its standard will encourage seats narrower than those presently provided in school buses, but will watch for any indication that that is occurring. Action can be taken in the future if it appears that seating is being designed to be narrower than at present.

In consideration of the foregoing, a new motor vehicle safety Standard No. 222, *School Bus Seating and Crash Protection*, is added as § 571.222, of Part 571 of Title 49, Code of Federal Regulations. . . .

*Effective date:* October 26, 1976. The effective date of this standard is established as 9 months after the date of its issuance, as required by the Motor Vehicle and Schoolbus Safety Amendments of 1974, Pub. L. 93-492, section 202 (15 U.S.C. 1397(j)(1)(A)).

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); § 202, Pub. L. 93-492, 88 Stat. 1470 (15 U.S.C. 1392); delegation of authority at 49 CFR 1.50).

Issued on January 22, 1976.

Howard J. Dugoff  
Acting Administrator

41 F.R. 4016  
January 28, 1976



## MOTOR VEHICLE SAFETY STANDARD NO. 222

### School Bus Seating and Crash Protection

**S1. Scope.** This standard establishes occupant protection requirements for school bus passenger seating and restraining barriers.

**S2. Purpose.** The purpose of this standard is to reduce the number of deaths and the severity of injuries that result from the impact of school bus occupants against structures within the vehicle during crashes and sudden driving maneuvers.

**S3. Application.** This standard applies to school buses.

**S4. Definitions.** "Contactable surface" means any surface within the zone specified in S5.3.1.1 that is contactable from any direction by the test device described in S6.6, except any surface on the front of a seat back or restraining barrier 3 inches or more below the top of the seat back or restraining barrier.

"School bus passenger seat" means a seat, other than the driver's seat, in a school bus.

**S4.1** The number of seating positions considered to be in a bench seat is expressed by the symbol *W*, and calculated as the bench width in inches divided by 15 and rounded to the nearest whole number.

**S5. Requirements.** (a) Each vehicle with a gross vehicle weight rating of more than 10,000 pounds shall be capable of meeting any of the requirements set forth under this heading when tested under the conditions of S6. However, a particular school bus passenger seat (i.e., test specimen) in that weight class need not meet further requirements after having met S5.1.2 and S5.1.5, or having been subjected to either S5.1.3, S5.1.4, or S5.3.

(b) Each vehicle with a gross vehicle weight rating of 10,000 pounds or less shall be capable of meeting the following requirements at all seating positions other than the driver's seat: (1) The requirements of §§ 571.208, 571.209, and 571.210 (Standard Nos. 208, 209, and 210) as they apply to multipurpose passenger vehicles; and (2) the requirements of S5.1.2, S5.1.3, S5.1.4, S5.1.5, and S5.3 of this standard. However, the requirements of Standard Nos. 208 and 210 shall be met at *W* seating positions in a bench seat using a body block as specified in Figure 2 of this standard, and a particular school bus passenger seat (i.e., a test specimen) in that weight class need not meet further requirements after having met S5.1.2 and S5.1.5, or having been subjected to either S5.1.3, S5.1.4, S5.3, or § 571.210 (Standard No. 210).

**S5.1 Seating requirements.** School bus passenger seats shall be forward facing.

**S5.1.1** [Reserved]

**S5.1.2 Seat back height and surface area.** Each school bus passenger seat shall be equipped with a seat back that, in the front projected view, has a front surface area above the horizontal plane that passes through the seating reference point, and below the horizontal plane 20 inches above the seating reference point, of not less than 90 percent of the seat bench width in inches multiplied by 20.

**S5.1.3 Seat performance forward.** When a school bus passenger seat that has another seat behind it is subjected to the application of force as specified in S5.1.3.1 and S5.1.3.2, and subsequently, the application of additional force to the seat back as specified in S5.1.3.3 and S5.1.3.4:

(a) The seat back force deflection curve shall fall within the zone specified in Figure 1:

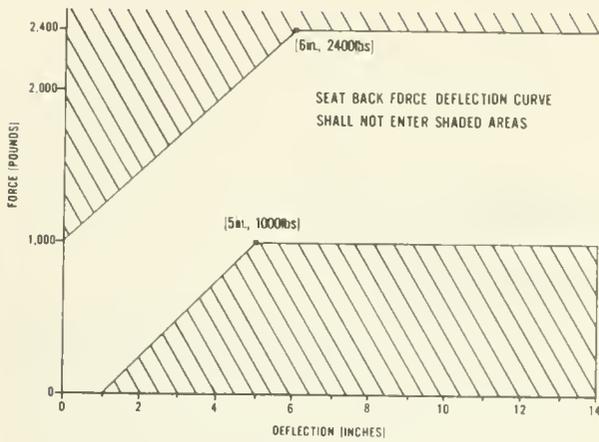


FIGURE 1 FORCE/DEFLECTION ZONE

(b) Seat back deflection shall not exceed 14 inches; (for determination of (a) and (b) the force/deflection curve describes only the force applied through the upper loading bar, and only the forward travel of the pivot attachment point of the upper loading bar, measured from the point at which the initial application of 10 pounds of force is attained.)

(c) The seat shall not deflect by an amount such that any part of the seat moves to within 4 inches of any part of another school bus passenger seat or restraining barrier in its originally installed position;

(d) The seat shall not separate from the vehicle at any attachment point; and

(e) Seat components shall not separate at any attachment point.

**55.1.3.1** Position the loading bar specified in S6.5 so that it is laterally centered behind the seat back with the bar's longitudinal axis in a transverse plane of the vehicle and in any horizontal plane between 4 inches above and 4 inches below the seating reference point of the school bus passenger seat behind the test specimen.

**55.1.3.2** Apply a force of 700W pounds horizontally in the forward direction through the loading bar at the pivot attachment point. Reach the specified load in not less than 5 nor more than 30 seconds.

**55.1.3.3** No sooner than 1.0 second after attaining the required force, reduce that force to 350W pounds and, while maintaining the pivot

point position of the first loading bar at the position where the 350W pounds is attained, position a second loading bar described in S6.5 so that it is laterally centered behind the seat back with the bar's longitudinal axis in a transverse plane of the vehicle and in the horizontal plane 16 inches above the seating reference point of the school bus passenger seat behind the test specimen, and move the bar forward against the seat back until a force of 10 pounds has been applied.

**55.1.3.4** Apply additional force horizontally in the forward direction through the upper bar until 4,000W inch-pounds of energy have been absorbed in deflecting the seat back (or restraining barrier). Apply the additional load in not less than 5 seconds nor more than 30 seconds.

**55.1.4 Seat performance rearward.** When a school bus passenger seat that has another seat behind it is subjected to the application of force as specified in S5.1.4.1 and S5.1.4.2:

(a) Seat back force shall not exceed 2,200 pounds;

(b) Seat back deflection shall not exceed 8 inches; (For determination of (a) and (b) the force/deflection curve describes only the force applied through the loading bar, and only the rearward travel of the pivot attachment point of the loading bar, measured from the point at which the initial application of 50 pounds of force is attained.

(c) The seat shall not deflect by an amount such that any part of the seat moves to within 4 inches of any part of another passenger seat in its originally installed position;

(d) The seat shall not separate from the vehicle at any attachment point; and

(e) Seat components shall not separate at any attachment point.

**55.1.4.1** Position the loading bar described in S6.5 so that it is laterally centered forward of the seat back with the bar's longitudinal axis in a transverse plane of the vehicle and in the horizontal plane 13.5 inches above the seating reference point of the test specimen, and move the loading bar rearward against the seat back until a force of 50 pounds has been applied.

**55.1.4.2** Apply additional force horizontally rearward through the loading bar until 2,800W inch-pounds of energy has been absorbed in deflecting the seat back. Apply the additional load in not less than 5 seconds nor more than 30 seconds.

**55.1.5 Seat cushion retention.** In the case of school bus passenger seats equipped with seat cushions, with all manual attachment devices between the seat and the seat cushion in the manufacturer's designed position for attachment, the seat cushion shall not separate from the seat at any attachment point when subjected to an upward force of five times the seat cushion weight, applied in any period of not less than 1 nor more than 5 seconds, and maintained for 5 seconds.

**55.2 Restraining barrier requirements.** Each vehicle shall be equipped with a restraining barrier forward of any designated seating position that does not have the rear surface of another school bus passenger seat within 20 inches of its seating reference point, measured along a horizontal longitudinal line through the seating reference point in the forward direction.

**55.2.1 Barrier-seat separation.** The horizontal distance between the restraining barrier's rear surface and the seating reference point of the seat in front of which it is required shall be not more than 20 inches, measured along a horizontal longitudinal line through the seating reference point in the forward direction.

**55.2.2 Barrier position and rear surface area.** The position and rear surface area of the restraining barrier shall be such that, in a front projected view of the bus, each point of the barrier's perimeter coincides with or lies outside of the perimeter of the seat back of the seat for which it is required.

**55.2.3 Barrier performance forward.** When force is applied to the restraining barrier in the same manner as specified in S5.1.3.1 through S5.1.3.4 for seating performance tests:

(a) The restraining barrier force/deflection curve shall fall within the zone specified in Figure 1:

(b) Restraining barrier deflection shall not exceed 14 inches; (For computation of (a) and

(b) the force/deflection curve describes only the force applied through the upper loading bar, and only the forward travel of the pivot attachment point of the loading bar, measured from the point at which the initial application of 10 pounds of force is attained.)

(c) Restraining barrier deflection shall not interfere with normal door operation;

(d) The restraining barrier shall not separate from the vehicle at any attachment point; and

(e) Restraining barrier components shall not separate at any attachment point.

### 55.3 Impact zone requirements.

**55.3.1 Head protection zone.** Any contactable surface of the vehicle within any zone specified in S5.3.1.1 shall meet the requirements of S5.3.1.2 and S5.3.1.3. However, a surface area that has been contacted pursuant to an impact test need not meet further requirements contained in S5.3.

**55.3.1.1** The head protection zones in each vehicle are the spaces in front of each school bus passenger seat which, in relation to that seat and its seating reference point, are enclosed by the following planes:

(a) Horizontal planes 12 inches and 40 inches above the seating reference point;

(b) A vertical longitudinal plane tangent to the inboard (aisle side) edge of the seat;

(c) A vertical longitudinal plane 3.25 inches inboard of the outboard edge of the seat, and

(d) Vertical transverse planes through and 30 inches forward of the reference point.

**55.3.1.2 Head form impact requirement.** When any contactable surface of the vehicle within the zones specified in S5.3.1.1 is impacted from any direction at 22 feet per second by the head form described in S6.6, the axial acceleration at the center of gravity of the head form shall be such that the expression

$$\left[ \frac{1}{(t_2 - t_1)} \int_{t_1}^{t_2} a dt \right]^{2.5} (t_2 - t_1)$$

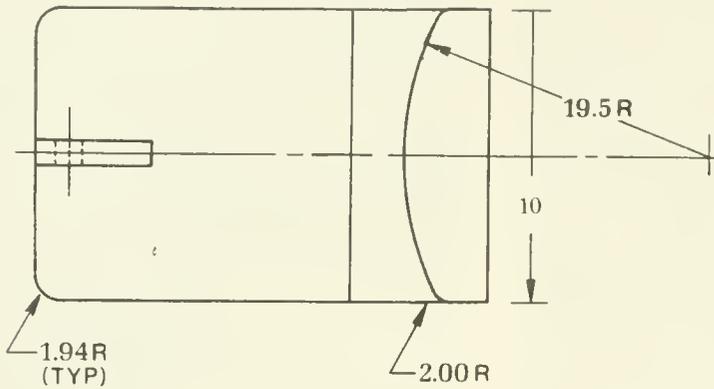
shall not exceed 1,000 where  $a$  is the axial acceleration expressed as a multiple of  $g$  (the acceleration due to gravity), and  $t_1$  and  $t_2$  are any two points in time during the impact.

**55.3.1.3 Head form force distribution.** When any contactable surface of the vehicle within the zones specified in S5.3.1.1 is impacted from any direction at 22 feet per second by the head form described in S6.6, the energy necessary to deflect the impacted material shall be not less than 40 inch-pounds before the force level on the head form exceeds 150 pounds. When any contactable surface within such zones is impacted by the head form from any direction at 5 feet per second, the contact area on the head form surface shall be not less than 3 square inches.

**55.3.2 Leg protection zone.** Any part of the seat backs or restraining barriers in the vehicle within any zone specified in S5.3.2.1 shall meet the requirements of S5.3.2.2.

**55.3.2.1.** The leg protection zones of each vehicle are those parts of the school bus passenger seat backs and restraining barriers bounded by horizontal planes 12 inches above and 4 inches below the seating reference point of the school bus passenger seat immediately behind the seat back or restraining barrier.

**55.3.2.2.** When any point on the rear surface of that part of a seat back or restraining barrier within any zone specified in S5.3.2.1 is impacted from any direction at 16 feet per second by the knee form specified in S6.7, the resisting force of the impacted material shall not exceed 600 pounds and the contact area on the knee form surface shall not be less than 3 square inches.



⊕ BLOCK COVERED BY  
1.00 MED. DENSITY CANVAS  
COVERED FOAM RUBBER

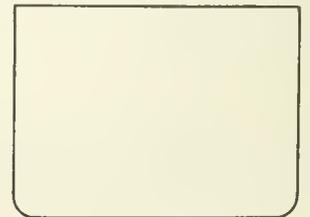
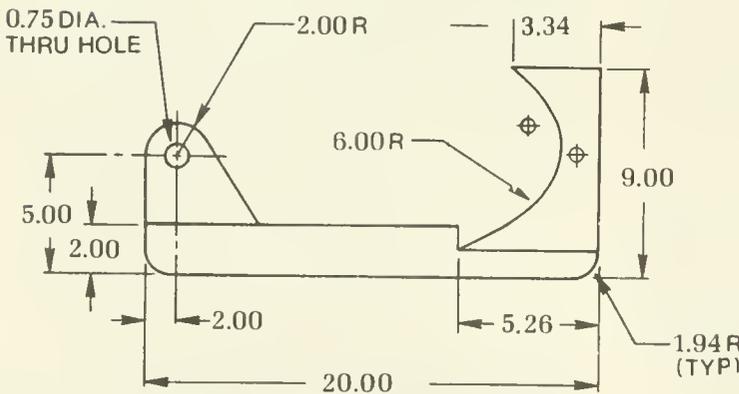


FIGURE 2 - BODY BLOCK FOR LAP BELT

## BIHEMISPHERICAL HEAD FORM RADII

**56. Test conditions.** The following conditions apply to the requirements specified in S5.

**56.1 Test surface.** The bus is at rest on a level surface.

**56.2 Tires.** Tires are inflated to the pressure specified by the manufacturer for the gross vehicle weight rating.

**56.3 Temperature.** The ambient temperature is any level between 32 degrees F. and 90 degrees F.

**56.4 Seat back position.** If adjustable, a seat back is adjusted to its most upright position.

**56.5 Loading bar.** The loading bar is a rigid cylinder with an outside diameter of 6 inches that has hemispherical ends with radii of 3 inches and with a surface roughness that does not exceed 63 micro-inches, root mean square. Then length of the loading bar is 4 inches less than the width of the seat back in each test. The stroking mechanism applies force through a pivot attachment at the centerpoint of the loading bar which allows the loading bar to rotate in a horizontal plane 30 degrees in either direction from the transverse position.

**56.5.1** A vertical or lateral force of 4,000 pounds applied externally through the pivot attachment point of the loading bar at any position reached during a test specified in this standard shall not deflect that point more than 1 inch.

**56.6 Head form.** The head form for the measurement of acceleration is a rigid surface comprised of two hemispherical shapes, with total equivalent weight of 11.5 pounds. The first of the two hemispherical shapes has a diameter of 6.5 inches. The second of the two hemispherical shapes has a 2 inch diameter and is centered as shown in Figure 3 to protrude from the outer surface of the first hemispherical shape. The surface roughness of the hemispherical shapes does not exceed 63 micro-inches, root mean square.

**56.6.1** The direction of travel of the head form is coincidental with the straight line connecting the centerpoints of the two spherical outer surfaces which constitute the head form shape.

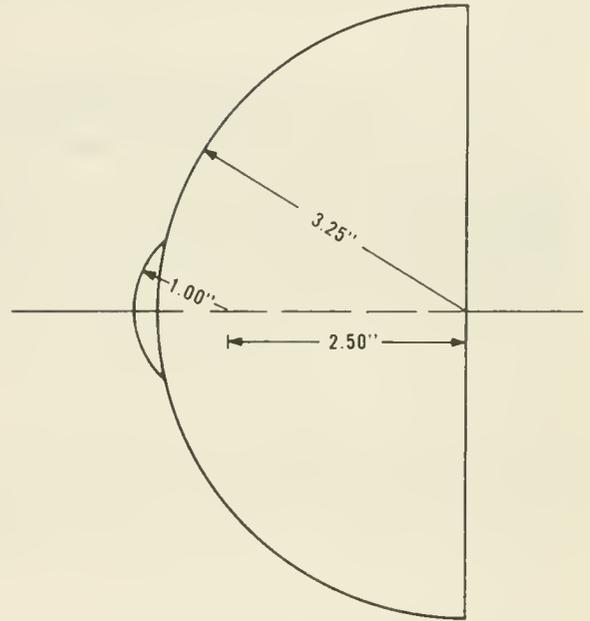


FIGURE 3

**56.6.2** The head form is instrumented with an acceleration sensing device whose output is recorded in a data channel that conforms to the requirements for a 1,000 Hz channel class as specified in SAE Recommended Practice J211a, December 1971. The head form exhibits no resonant frequency below three times the frequency of the channel class. The axis of the acceleration sensing device coincides with the straight line connecting the centerpoints of the two hemispherical outer surfaces which constitute the head form shape.

**56.6.3** The head form is guided by a stroking device so that the direction of travel of the head form is not affected by impact with the surface being tested at the levels called for in the standard.

**56.7 Knee form.** The knee form for measurement of force is a rigid 3-inch-diameter cylinder, with an equivalent weight of 10 pounds, that has one rigid hemispherical end with a  $1\frac{1}{2}$  inch radius forming the contact surface of the knee

form. The hemispherical surface roughness does not exceed 63 micro-inches, root mean square.

**56.7.1** The direction of travel of the knee form is coincidental with the centerline of the rigid cylinder.

**56.7.2** The knee form is instrumented with an acceleration sensing device whose output is recorded in a data channel that conforms to the requirements of a 600 Hz channel class as specified in the SAE Recommended Practice J211a, December 1971. The knee form exhibits no resonant frequency below three times the frequency of the channel class. The axis of the

acceleration sensing device is aligned to measure acceleration along the centerline of the cylindrical knee form.

**56.7.3** The knee form is guided by a stroking device so that the direction of travel of the knee form is not affected by impact with the surface being tested at the levels called for in the standard.

**56.8** The head form, knee form, and contactable surfaces are clean and dry during impact testing.

**41 F.R. 4016**  
**January 28, 1976**

**MOTOR VEHICLE SAFETY STANDARD NO. 301****Fuel Tanks, Fuel Tank Filler Pipes, and Fuel Tank Connections—Passenger Cars**

**S1. Purpose and scope.** This standard specifies requirements for the integrity and security of fuel tanks, fuel tank filler pipes, and fuel tank connections to minimize fire hazard as a result of collision.

**S2. Application.** This standard applies to passenger cars.

**S3. Requirements.** When tested in accordance with S4:

(a) Fuel tank filler pipes, fuel tank connections to fuel lines, and fuel tanks filled to at least 90 percent of capacity with a liquid having substantially the same viscosity as, and specific

gravity no less than, the fuel used in the vehicle, shall not discharge fluid at a rate greater than 1 ounce (by weight) per minute after termination of impact.

(b) Fluid losses during impact shall not exceed 1 ounce (by weight).

**S4. Demonstration procedures.** [Impact the vehicle perpendicularly into a fixed collision barrier at a forward longitudinal velocity of 30 miles per hour. (35 F.R. 11242 July 14, 1970. Effective: 9/1/70)]

**32 F.R. 2416  
February 3, 1967**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY  
STANDARD NO. 301(9/1/75)**

**Fuel System Integrity**

**(Docket No. 70-20; Notice 2)**

This notice amends Motor Vehicle Safety Standard No. 301 on fuel system integrity to specify static rollover requirements applicable to passenger cars on September 1, 1975, and to extend applicability of the standard to multipurpose passenger vehicles, trucks, and buses with a GVWR of 10,000 pounds or less on September 1, 1976.

The NHTSA proposed amending 49 CFR 571.301, *Fuel Tanks, Fuel Tank Filler Pipes, and Fuel Tank Connections*, on August 29, 1970, (35 F.R. 13799). Under the proposal the standard would be extended to all vehicles with a GVWR of 10,000 pounds or less. No fuel spillage would be permitted during the standard's tests. As proposed, these would include a spike stop from 60 mph, and a 30 mph frontal barrier crash. Additional tests for vehicles with a GVWR of 6,000 pounds or less would include a rear-end collision with a fixed barrier at 30 mph, and a static rollover test following the frontal barrier crash. With respect to the proposal: the frontal impact and static rollover tests are adopted but with an allowance of fuel spillage of 1 ounce per minute; the spike stop test is not adopted; and the rear-end fixed barrier collision test is being repropoed in a separate rule making action published today to substitute a moving barrier.

The proposal that there be zero fuel spillage was almost universally opposed for cost/benefit reasons. The NHTSA has concluded that the requirement adopted, limiting fuel spillage to 1 ounce per minute, will have much the same effect as a zero-loss requirement. The standard will effectively require motor vehicles to be designed for complete fuel containment, since any spillage allowed by design in the aftermath of

testing could well exceed the limit of the standard. At the same time, the 1-ounce allowance would eliminate concern over a few drops of spillage that in a functioning system may be unavoidable.

Fuel loss will be measured for a 15-minute period for both impact and rollover tests.

The NHTSA proposed a panic-braking stop from 60 mph to demonstrate fuel system integrity. Many commented that this appeared superfluous, increasing testing costs with no performance improvements, since the proposed front and rear impact tests represented considerably higher deceleration loadings than could be achieved in braking. The NHTSA concurs, and has not adopted the panic stop test. The frontal barrier crash at 30 mph has been retained for passenger cars, and extended to multipurpose passenger vehicles, trucks, and buses with a GVWR of 10,000 pounds or less as of September 1, 1976.

The static rollover test was adopted as proposed. It applies to passenger cars as of September 1, 1975, and to multipurpose passenger vehicles, trucks, and buses with a GVWR of 6,000 pounds or less, as of September 1, 1976. The rollover test follows the front barrier crash, and consists of a vehicle being rotated on its longitudinal axis at successive increments of 90°. A condition of the test is that rotation between increments occurs in not less than 1 minute and not more than 3 minutes. After reaching a 90° increment, the vehicle is held in that position for 5 minutes.

The proposed rear-end crash test incorporated a fixed collision barrier. Manufacturers generally favored a moving barrier impact as a closer

simulation of real world conditions. The NHTSA concurs and is not adopting a rear end fixed barrier test. Instead, it is proposing a rear-end moving barrier collision test as part of the notice of proposed rulemaking published today.

Under the proposal the vehicle would be loaded to its GVWR with the fuel tank filled to any level between 90 and 100 percent of capacity. Many commenters objected on the grounds that full loading of a vehicle represents an unrealistic condition in terms of actual crash experience. The NHTSA does not agree. Although full loading of a vehicle is not the condition most frequently encountered, it certainly occurs frequently enough that the vehicle should be designed to give basic protection in that condition. The vehicle test weight condition has been adopted as proposed. It should be noted that, in the parallel notice of proposed rulemaking issued today, vehicles would be tested under the

weight conditions specified in Standard No. 208, effective September 1, 1975.

In consideration of the foregoing, 49 CFR Part 571.301, Motor Vehicle Safety Standard No. 301, is amended . . . .

*Effective date:* September 1, 1975. Because of the necessity to allow manufacturers sufficient production leadtime it is found for good cause shown that an effective date later than 1 year after issuance of this rule is in the public interest.

(Sec. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on August 15, 1973.

James B. Gregory  
Administrator

**38 F.R. 22397**  
**August 20, 1973**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 301

### Fuel System Integrity

(Docket No. 73-20; Notice 2)

The purpose of this notice is to amend Federal Motor Vehicle Safety Standard No. 301, *Fuel System Integrity*, to upgrade substantially the requirements of the standard by specifying a rear moving barrier crash, a lateral moving barrier crash, and a frontal barrier crash including impacts at any angle up to 30° in either direction from the perpendicular.

A notice of proposed rulemaking published August 20, 1973 (38 F.R. 22417) proposed the imposition of additional testing requirements designed to ameliorate the dangers associated with fuel spillage following motor vehicle accidents. In an amendment to Standard No. 301, published on the same day as the proposal, a frontal barrier crash and a static rollover test were specified. In order to ensure the safety of fuel systems in any possible collision situation, the NHTSA finds it essential to incorporate additional proposed test requirements into the present standard and to make these requirements applicable to all vehicle types with a GVWR of 10,000 pounds or less.

Comments in response to the proposal were received from 29 commenters. Any suggestions for changes of the proposal not specifically mentioned herein are denied, on the basis of all the information presently available to this agency. A number of the issues raised in the comments have been dealt with by the agency in its response to the petitions for reconsideration of the final rule issued on August 20, 1973. In its notice responding to the petitions, the NHTSA considered objections to the use of actual fuel during testing, the specified fuel fill level, the application of the standard to vehicles using diesel fuel, the fuel spillage measuring requirement, and the allegedly more stringent loading requirements

applicable to passenger cars. The type of fuel subject to the standard was also clarified.

Objections were registered by 13 commenters to the proposed inclusion of a dynamic rollover test in the fuel system integrity standard. As proposed, the requirement calls for a measurement of the fuel loss while the vehicle is in motion. Commenters pointed out the exceptional difficulty in measuring or even ascertaining a leakage when the vehicle is rolling over at 30 mph. The NHTSA has decided that the objections have merit, and has deleted the dynamic rollover test. The results of the dynamic rollover do not provide sufficiently unique data with regard to the fuel system's integrity to justify the cost of developing techniques for accurately measuring spillage during such a test, and of conducting the test itself. The NHTSA has concluded that the severity of the other required tests, when conducted in the specified sequence, is sufficient to assure the level of fuel system integrity intended by the agency.

Triumph Motors objected to the use of a 4,000-pound barrier during the moving barrier impacts, asserting that such large barriers discriminate against small vehicles. Triumph requested that the weight of the barrier be the curb weight of the vehicle being tested in order to alleviate the burden on small vehicles. The NHTSA has concluded that no justification exists for this change. The moving barrier is intended to represent another vehicle with which the test vehicle must collide. The use of a 4,000-pound moving barrier is entirely reasonable since vehicles in use are often over 4,000 pounds in weight and a small vehicle is as likely to collide with a vehicle of that size as one smaller. The NHTSA considers it important that vehicle fuel systems be

PART 571; S 301-75—PRE 3

designed in such a way as to withstand impacts from vehicles they are exposed to on the road, regardless of the differences in their sizes.

Jeep and American Motors objected to the effective dates of the proposed requirements and asked that they be extended. Jeep favors an effective date not earlier than September 1, 1979, and American Motors favors a September 1, 1978, effective date. The NHTSA denies these requests. It has found that the time period provided for development of conforming fuel systems is reasonable and should be strictly adhered to considering the urgent need for strong and resilient fuel systems.

Several commenters expressed concern over the impact of the prescribed testing procedures on manufacturers of low-volume specialty vehicles. The NHTSA appreciates the expense of conducting crash tests on low-production vehicles, realizing that the burden on the manufacturer is related to the number of vehicles he manufactures. However, there are means by which the small-volume manufacturer can minimize the costs of testing. He can concentrate test efforts on the vehicle(s) in his line that he finds most difficult to produce in conformity with the standard. These manufacturers should also be aware that an exemption from application of the standard is available where fewer than 10,000 vehicles per year are produced and compliance would subject him to substantial financial hardship.

In responding to the petitions for reconsideration of the amendment to Standard No. 301, published August 20, 1973, the NHTSA revised the fuel system loading requirement to specify Stoddard solvent as the fuel to be used during testing. In accordance with that amendment, the proposed requirement that the engine be idling during the testing sequence is deleted. However, electrically driven fuel pumps that normally run when the electrical system in the vehicle is activated shall be operating during the barrier crash tests.

In order to fulfill the intention expressed in the preamble to the proposal, that simultaneous testing under Standards Nos. 208 and 301 be possible, language has been added to subparagraph S7.1.5 of Standard No. 301 specifying the same method of restraint as that required in

Standard No. 208. In its response to petitions for reconsideration of Standard No. 301 (39 F.R. 10586) the NHTSA amended the standard by requiring that each dummy be restrained during testing only by means that are installed in the vehicle for protection at its seating position and that require no action by the vehicle occupant.

Suggestions by several commenters that the application of certain crash tests should be limited to passenger cars in order to maintain complete conformance to the requirements of Standard No. 208 are found to be without merit. Enabling simultaneous testing under several standards, although desirable, is not the most important objective of the safety standards. The NHTSA is aware of the burden of testing costs, and therefore has sought to ease that burden where possible by structuring certain of its standards to allow concurrent testing for compliance. It must be emphasized, however, that the testing requirements specified in a standard are geared toward a particular safety need. Application of the tests proposed for Standard No. 301 to all vehicle types with a GVWR of 10,000 pounds or less is vital to the accomplishment of the degree of fuel system integrity necessary to protect the occupants of vehicles involved in accidents.

No major objections were raised concerning the proposed angular frontal barrier crash, lateral barrier crash, or rear moving barrier crash. On the basis of all information available to this agency, it has been determined that these proposed crash tests should be adopted as proposed.

In consideration of the foregoing, 49 CFR 571.301, Motor Vehicle Safety Standard No. 301, is amended to read as set forth below.

Effective date: September 1, 1975, with additional requirements effective September 1, 1976, and September 1, 1977, as indicated.

(Secs. 103, 119, Pub. L. 89-562, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on March 18, 1974.

James B. Gregory  
Administrator

39 F.R. 10588  
March 21, 1974

**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 301-75****Fuel System Integrity****(Docket No. 73-20; Notice 3)**

This notice responds to petitions for reconsideration of the two recent Federal Register notices amending and upgrading Standard No. 301 (39 F.R. 10586; 39 F.R. 10588) and amends the standard in several respects.

On March 21, 1974 two notices were published pertaining to Standard No. 301, *Fuel System Integrity*. One notice (39 F.R. 10586) responded to petitions for reconsideration of an earlier amendment to the standard (38 F.R. 22397), while the other (39 F.R. 10588) substantially upgraded the standard's performance requirements. It was the intention of the NHTSA that the notice upgrading the standard be considered as the final rule and supersede the notice responding to petitions. Hereafter, the notice responding to petitions will be referred to as Notice 1, while the notice upgrading the standard will be referred to as Notice 2.

On October 27, 1974, the Motor Vehicle and Schoolbus Safety Amendments of 1974 (P.L. 93-492) were signed into law. These amendments to the National Traffic and Motor Vehicle Safety Act incorporate Standard No. 301 as it was published in Notice 2 on March 21, 1974. According to the amendment the technical errors which appeared in Notice 2 may be corrected, while future amendments are prohibited from diminishing the level of motor vehicle safety which was established in the notice. The changes contained in this notice conform to these statutory requirements.

Due to an oversight, Notice 2 failed to include two provisions which appeared in Notice 1. The limitation of the standard's application to vehicles which use fuel with a boiling point above 32°F was inadvertently omitted in Notice 2 and is hereby reinstated. Notice 2 also failed to include a provision specifying that vehicles not be

altered during the testing sequences. It was the intent of the NHTSA that damage or other alteration of the vehicle incurred during the barrier crashes not be corrected prior to the static rollover tests. The test requirements are therefore amended to prohibit the alteration of vehicles following each of the specified test impacts.

In order to clarify the manner in which the load is to be distributed during testing of multipurpose passenger vehicles, trucks, and buses, S7.1.5(b) is amended to require that when the weight on one of the axles exceeds its proportional share of the loaded vehicle weight, when the vehicle is loaded only with dummies, the remainder of the required test weight shall be placed on the other axle, so that the weight on the first axle remains the same. The loading specification did not specifically address this contingency.

The requirement that the load be located in the load carrying area of multipurpose passenger vehicles, trucks, and buses during testing is deleted since the agency has determined that such a limitation is consistent with the provision specifying distribution of weight in proportion with the vehicle's gross axle weight ratings.

Petitions for reconsideration were received from eleven petitioners. Although only those comments raising issues found to be significant have been discussed, due consideration has been given to all requests. Any requests not specifically discussed herein are denied.

A substantial number of petitioners objected to the requirement that dummies used during testing be restrained only by passive means installed at the seating positions. Petitioners pointed out that mandatory passive restraint systems proposed in Standard No. 208 have a proposed effective date of September 1, 1976; one year after the September 1, 1975 effective

date set for implementation of Standard 301. This would leave a period of time when most dummies would be involved in testing while totally unrestrained. Renault, Jeep, American Motors, Mercedes-Benz, General Motors, and Ford requested that the dummies be restrained during testing by whatever means, active or passive, are installed at the particular seating positions. To provide otherwise, they argued, would unnecessarily expose the dummies to costly damage when subjected to impacts in an unrestrained condition.

The NHTSA finds petitioners' objections meritorious. Although this agency has determined that reliable test results can be best obtained when occupant weight is included in the vehicle during crash testing, the manner in which that weight is installed is subject to additional considerations. The NHTSA has made clear its desire to enable simultaneous testing under more than one standard where the test requirements are compatible. Standards 301 and 208 both require frontal and lateral barrier crash tests which can be conducted concurrently if the vehicles are loaded uniformly. Since Standard 208 provides for crash testing with dummies in vehicles with passive restraint systems, Standard 301 testing of these same vehicles should be conducted with dummies installed in the seating positions provided under Standard 208. The presence of the passive restraints will protect the dummies from unnecessary damage and the required testing for compliance with both standards can be accomplished simultaneously. Where a vehicle is not equipped with passive restraints, and Standard 208 testing is not mandated, weight equal to that of a 50th percentile test dummy should be secured to the floor pan at the front outboard designated seating positions in the vehicles being tested.

Further concern over the damage to which test dummies might be exposed was manifested by Jeep and American Motors. They petitioned for the removal of the dummies prior to the static rollover tests, arguing that their presence serves no safety-related purpose. The NHTSA has granted the request, on the basis of its determination that the dummies would have little or no effect on the fuel system's integrity during the rollover segment of the test procedure.

Jeep and American Motors further suggested that the standard specify that hardware and instrumentation be removed prior to the static rollover test in order to prevent its damage. This request is denied as unnecessary. Standard No. 301 contains no specification for the inclusion of instrumentation during testing. Any instrumentation present in the vehicle is there by decision of the manufacturer to assist him in monitoring the behavior of the fuel system during testing, and must be installed and utilized in such a manner as not to affect the test results. Therefore, as long as the loading requirements of the standard are met, manufacturers may deal with their instrumentation in any fashion they wish, as long as the test results are unaffected.

Volkswagen urged that unrestrained dummies not be required during the rear moving impact test, citing the absence of such a test in Standard 208 and alleging that the integrity of vehicle fuel systems would not be greatly affected by the presence of dummies. This request is denied. The rear moving barrier crash specified in proposed Standard 207, *Seating Systems*, provides for the installation of dummies in the same seating positions as required for Standard 301, thus permitting simultaneous conduct of the rear barrier crashes required by both standards. In order to obtain realistic and reliable test results, occupant weight must be in vehicles during Standard 301 crash testing. The NHTSA has determined that unrestrained dummies would have, at most, slight vulnerability to damage during rear barrier crash tests, since the impact is such that the seats themselves serve as protective restraint mechanisms. It has therefore been concluded that the best method for including occupant weight during rear barrier crash testing is with test dummies.

Notice 2 specified that the parking brake be engaged during the rear moving barrier crash test. Ford requested in its petition for reconsideration that this requirement be changed in order to enable simultaneous rear barrier crash testing with Standard 207 which provides for disengagement of the parking brake in its recent proposal. The NHTSA has decided to grant Ford's request. The condition of the parking brake during this test sequence would not so significantly affect the test results as to warrant

retention of a requirement that would prevent simultaneous testing.

The Recreational Vehicle Institute objected to the standard, arguing that it was not cost-effective as applied to motor homes. RVI requested that different test procedures be developed for motor home manufacturers. Specifically it objected to what it suggested was a requirement for unnecessary double testing in situations where the incomplete vehicle has already been tested before the motor home manufacturer receives it. RVI expressed the view that the motor home manufacturer should not have to concern himself with compliance to the extent that he must test the entire vehicle in accordance with the standard's test procedures.

The NHTSA has found the requirements of Standard 301 to be reasonable in that they enforce a level of safety that has been determined necessary and provide adequate lead time for manufacturers to develop methods and means of compliance. The National Traffic and Motor Vehicle Safety Act does not require a manufacturer to test vehicles by any particular method. It does require that he exercise due care in assuring himself that his vehicles are capable of satisfying the performance requirements of applicable standards when tested in the manner prescribed. This may be accomplished, however, by whatever means the manufacturer reasonably determines to be reliable. If the final stage manufacturer of a motor home concludes that additional testing by him of the entire vehicle for compliance is unnecessary, and he has exercised due care in completing the vehicle in a manner that continues its conformity to applicable standards, he is under no obligation to repeat the procedures of the standards.

RVI further pressed its contention that the standard is not cost-beneficial by arguing that the agency has not provided specific data indicating a frequency of fuel system fires in motor homes that would justify the costs imposed by the standard.

Sufficient record evidence has been found to support the conclusion that fuel spillage in the types of crashes with which the standard deals is a major safety hazard. The only basis upon which motor home manufacturers could justify

the exception of their vehicles from Standard 301's requirements would be an inherent immunity from gasoline spillage. The standard establishes a reasonable test of a vehicle's ability to withstand impacts without experiencing fuel loss. If a motor home is designed in such a way as to preclude the spillage of fuel during the prescribed test impacts, compliance with the standard should present no significant hardship.

Volkswagen challenged the cost-benefit rationale of the more extensive performance requirements contained in Notice 2, and proposed that only the rear barrier crash be retained, if sufficient data exists to support its inclusion. The agency has carefully considered the issues raised in the Volkswagen petition. As discussed earlier, Standard 301 has been designed to allow testing for its requirements with some of the same barrier crash tests that are required by other standards: 208, 204, 212, and 207. This should reduce substantially the costs of testing to Standard 301, especially when viewed on a cost-per-vehicle basis. The NHTSA has concluded that the changes necessary for vehicles to comply with the standard are practicable and that the need for such increased fuel system integrity is sufficient to justify the costs.

The Recreational Vehicle Institute also urged that the effective date for motor homes be delayed 1 year beyond the date set for application of the standard to other vehicles. RVI contends that a uniform effective date for all manufacturers will create serious problems for the motor home manufacturer who will not have complying incomplete vehicles available to him until the effective date of the standard.

The NHTSA finds RVI's argument lacking in merit. Adequate lead time has been provided in Standard 301 to allow final stage manufacturers of multistage vehicles to become familiar with the requirements and to assure themselves that chassis and other vehicle components are available sufficiently in advance of the effective date to enable timely compliance. The availability of complying incomplete vehicles is a situation that should properly be resolved in the commercial dealings between motor home manufacturers and their suppliers. If the motor home manufacturer is unable to obtain complying in-

complete vehicles far enough in advance of the standard's effective date, he might, for example, work out an arrangement with his supplier whereby the supplier will provide information relating to the manner in which the incomplete vehicle must be completed in order to remain in compliance with all applicable safety standards. The lead time provided in the standards is planned to take into account the needs of persons at each stage of the manufacturing process, including final stage manufacturers.

Jeep, American Motors, and Toyota urged delays in the implementation of various aspects of the standard. Jeep suggested a new schedule for application of the standard's requirements to multipurpose passenger vehicles, trucks, and buses, stating that the current lead time is insufficient to enable completion of necessary design changes and compliance testing. American Motors requested a 1-year delay in the effective date for the static rollover test in order to allow satisfactory completion of the required Environmental Protection Agency 50,000 mile durability test. Once vehicles have completed required EPA testing and certification, their fuel system components cannot be altered. AMC says that it cannot make the design changes necessary for Standard 301 compliance in time to utilize them in this year's EPA tests. AMC also desires a 2-year delay in the frontal angular, rear, and lateral impact tests, alleging that that constitutes the minimum time necessary to produce designs that comply. Toyota asked for a delay in the frontal angular crash test for all passenger vehicles until 1978, in order to allow them sufficient time to develop a satisfactory means of compliance with the specified performance level.

All of these requests are denied. The lead time that has been provided for compliance with Standard 301 is found adequate and reasonable. The rollover requirements have been in rule form for over a year, and the more extensive requirements were proposed more than 3 years in advance of their effective dates. Considering the urgent need for stronger and more durable fuel systems, further delay of the effective dates is not justified. On the basis of all information available, the NHTSA has determined that development of complying fuel systems can be attained in the time allowed. In addition, Con-

gress has expressed in the recently enacted amendments to the National Traffic and Motor Vehicle Safety Act its decision that the effective dates specified in Notice 2 should be strictly adhered to.

Toyota requested that the requirements of the rear moving barrier crash not be imposed on vehicles with station wagon or hatch-back bodies, alleging difficulty in relocation of the fuel tank to an invulnerable position. The request is denied as the NHTSA has determined that satisfaction of the rear barrier crash requirements by station wagons and hatch-backs is practicable and necessary.

Volkswagen raised several objections in its petition to the static rollover test, including assertions that the test does not reflect real world accidents, and that the test procedure is unclear since the direction of rotation is unspecified.

The NHTSA does not consider these arguments to be germane. It is true that the static rollover test, like any "static" test, is not designed as a simulation of the actual behavior of a vehicle in a dynamic crash situation. It is intended rather as a laboratory method of quantitatively measuring the vehicle properties that contribute to safety in a range of crash situations. The NHTSA has found that a vehicle's performance in the static rollover test is directly related to the fuel system integrity that is the goal of the standard, and is an appropriate means of measuring that aspect of performance.

With regard to the direction of rotation, the NHTSA has stipulated that only a certain amount of fuel may escape during a 360° rotation of a vehicle on its longitudinal axis. The vehicle must be capable of meeting this performance level regardless of the direction of its rotation.

British Leyland (in a petition for rulemaking) and Volkswagen requested revision of the aspect of the barrier crash requirement limiting the amount of fuel spillage taking place from impact until motion of the vehicle has ceased. They stated that the current 1-ounce limitation is too difficult to measure in the period while the vehicle is moving and suggested that fuel spillage be averaged over the period from impact until 5 minutes following the cessation of motion.

The NHTSA must deny this request. The purpose of the current limitation on the spillage of fuel during the impact and post-impact motion is to prohibit the sudden loss of several ounces of fuel which might occur, as an example, by the displacement of the filler cap. Simultaneous loss of several ounces of fuel during the impact and subsequent vehicle motion could have a fire-causing potential, because of sparks that are likely to be given off during a skid or metal contact between vehicles.

Chrysler petitioned to have the requirement specifying that the moving barrier be guided during the entire impact sequence deleted in favor of a requirement that would allow the termination of guidance of the barrier immediately prior to impact. They argued that their suggested procedure is more representative of real world impacts.

The request is denied. The condition that there be no transverse or rotational movement of the barrier, which has been in effect since January 1, 1972, eliminates random variations between different tests and therefore makes the standard more repeatable and objective as required by the statute.

Jeep requested clarification that a given vehicle is only required to be subjected to one of the specified barrier impacts followed by a static rollover. This request is granted as it follows the

agency's intent and the standard is not specific on that point. Section S6. is amended to require that a single vehicle need only be capable of meeting a single crash test followed by a static rollover.

American Motors submitted a request that the agency finds repetitious of previous petitions, urging that vehicle fluids be stabilized at ambient temperatures prior to testing. In responding to earlier petitions for reconsideration from MVMA and GM in Notice 1, the NHTSA denied a request for temperature specification, stating that it intended that the full spectrum of temperatures encountered on the road be reflected in the test procedure. That continues to be this agency's position.

In light of the foregoing S3., S6., S6.1, S6.3, S7.1.4, and S7.1.5 of Standard No. 301, *Fuel System Integrity*, (49 CFR 571.301) are amended . . .

*Effective date:* September 1, 1975, with additional requirements effective September 1, 1976 and September 1, 1977, as indicated.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1407; delegation of authority at 49 CFR 1.51.)

Issued on November 15, 1974.

James B. Gregory  
Administrator

**39 F.R. 40857**  
**November 21, 1974**



## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 301-75

### Fuel System Integrity

(Docket No. 73-20; Notice 6)

This notice amends Standard No. 301, *Fuel System Integrity* (49 CFR 571.301), to specify new loading conditions and to establish a 30-minute fuel spillage measurement period following barrier crash tests.

On April 16, 1975, the NHTSA published a notice (40 F.R. 17036) proposing a revision of the loading conditions and fuel spillage measurement period requirement in Standard 301. The NHTSA also proposed in that notice an extension of the applicability of Standard 301 to school buses with a GVWR in excess of 10,000 pounds. At the request of several Members of Congress, the due date for comments on the school bus proposal was extended to June 26, 1975, and final rulemaking action on it will appear in a later Federal Register notice.

It was proposed that the current 15-minute fuel spillage measurement period be extended to 30 minutes in order to allow more time for leaks to be located and rates of flow to be established. Measurement of fuel loss during only a 15 minute time period is difficult because fuel may be escaping from various parts of the vehicle where it is not readily detectable. Chrysler, American Motors, and General Motors objected to the proposed change and asked that it either not be adopted or that adoption be delayed for one year until September 1, 1976.

The commenters argued that the revision was unnecessary and would involve a change in their testing methods. The NHTSA has fully considered these arguments and does not consider the amendment to prescribe a higher level of performance. It concludes that the 30-minute measurement period is necessary to achieve accurate measurement of fuel loss and assessment of vehicle compliance and accordingly amends

Standard 301 to prescribe the longer period for measurement.

The April 16, 1975, notice also proposed a change in the Standard 301 loading conditions to specify that 50th percentile test dummies be placed in specified seating positions during the frontal and lateral barrier crash tests, and that they be restrained by means installed in the vehicle for protection at the particular seating position. Currently the standard requires (during the frontal and lateral barrier crash tests) ballast weight secured at the specified designated seating positions in vehicles not equipped with passive restraint systems. In vehicles equipped with passive restraints, 50th percentile test dummies are to be placed in the specified seating positions during testing.

In petitions for reconsideration of this amendment to Standard No. 301 (39 F.R. 40857) various motor vehicle manufacturers stated that attachment of such ballast weight to the vehicle floor pans during the barrier crashes would exert unrealistic stresses on the vehicle structure which would not exist in an actual crash. The NHTSA found merit in petitioners' arguments, and its proposed revision of the loading conditions is intended to make the crash tests more representative of real-life situations.

Only Mazda objected to the proposal. It argued that curb weight be prescribed as the loading condition so that it could conduct Standard 301 compliance testing concurrently with testing for Standards No. 212 and 204. The NHTSA does not find merit in Mazda's request as the Standard 301 loading condition is considered necessary to assure an adequate level of fuel system integrity. Since the proposed loading conditions are more stringent than a curb weight

condition, manufacturers could conduct compliance testing for Standards 301, 212, and 204 simultaneously. If the vehicle complied with the requirements of Standards 212 and 204 when loaded according to 301 specifications, the manufacturer presumably could certify the capability of the vehicles to comply with the performance requirements of 212 and 204 when loaded to curb weight. It should be noted that the NHTSA is considering amending Standards 212 and 204 to specify the same loading conditions as proposed for Standard 301.

All other commenters supported immediate adoption of the proposed loading conditions. Therefore, the NHTSA adopts the loading conditions as they were proposed in the April 16, 1975, notice.

In consideration of the foregoing, S5.5 and S7.1.6 of Motor Vehicle Safety Standard No.

301, *Fuel System Integrity* (49 CFR 571.301), are amended to read as follows:

*Effective date:* Because this amendment revises certain requirements that are part of 49 CFR 571.301-75, Motor Vehicle Safety Standard 301-75, effective September 1, 1975, and creates no additional burden upon any person, it is found for good cause shown that an effective date of less than 180 days after publication is in the public interest.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued August 1, 1975.

Robert L. Carter  
Acting Administrator

**40 F.R. 33036**  
**August 6, 1975**

## MOTOR VEHICLE SAFETY STANDARD NO. 301-75

### Fuel System Integrity

**5.1 Scope.** This standard specifies requirements for the integrity of motor vehicle fuel systems.

**5.2 Purpose.** The purpose of this standard is to reduce deaths and injuries occurring from fires that result from fuel spillage during and after motor vehicle crashes.

**5.3 Application.** [This standard applies to passenger cars, and to multipurpose passenger vehicles, trucks, and buses that have a GVWR of 10,000 pounds or less and use fuel with a boiling point above 32° F. (39 F.R. 40857—November 21, 1974. Effective: 9/1/75)]

**5.4 Definition.** "Fuel spillage" means the fall, flow, or run of fuel from the vehicle but does not include wetness resulting from capillary action.

#### 5.5. General requirements.

**5.5.1 Passenger cars.** Each passenger car manufactured from September 1, 1975, to August 31, 1976, shall meet the requirements of S6.1 in a perpendicular impact only, and S6.4. Each passenger car manufactured on or after September 1, 1976, shall meet all the requirements of S6.

**5.5.2 Vehicles with GVWR of 6,000 pounds or less.** Each multipurpose passenger vehicle, truck, and bus with a GVWR of 6,000 pounds or less manufactured from September 1, 1976, to August 31, 1977, shall meet all the requirements of S6.1 in a perpendicular impact only, S6.2, and S6.4. Each of these types of vehicles manufactured on or after September 1, 1977, shall meet all the requirements of S6.

**5.5.3 Vehicles with GVWR of more than 6,000 pounds but not more than 10,000 pounds.** Each multipurpose passenger vehicle, truck, and bus with a GVWR of more than 6,000 pounds but not more than 10,000 pounds manufactured from

September 1, 1976, to August 31, 1977, shall meet the requirements of S6.1 in a perpendicular impact only. Each vehicle manufactured on or after September 1, 1977, shall meet all the requirements of S6.

**5.5.4 Fuel spillage: Barrier Crash.** [Fuel spillage in any fixed or moving barrier crash test shall not exceed 1 ounce by weight from impact until motion of the vehicle has ceased, and shall not exceed a total of 5 ounces by weight in the 5-minute period following cessation of motion. For the subsequent 25-minute period fuel spillage during any 1-minute interval shall not exceed 1 ounce by weight. (40 F.R. 33036—August 6, 1975. Effective: 9/1/75)]

**5.5.5 Fuel spillage: rollover.** Fuel spillage in any rollover test, from the onset of rotational motion, shall not exceed a total of 5 ounces by weight for the first 5 minutes of testing at each successive 90° increment. For the remaining testing period, at each increment of 90° fuel spillage during any 1-minute interval shall not exceed 1 ounce by weight.

**[5.6. Test requirements.** Each vehicle shall be capable of meeting the requirements of any barrier crash test followed by a static rollover, without alteration of the vehicle during the test sequence. A particular vehicle need not meet further requirements after having been subjected to a single barrier crash test and a static rollover test. (39 F.R. 40857—November 21, 1974. Effective: 9/1/75)]

**S6.1 Frontal barrier crash.** [When the vehicle traveling longitudinally forward at any speed up to and including 30 mph impacts a fixed collision barrier that is perpendicular to the line of travel of the vehicle, or at any angle up to 30° in either direction from the perpendicular to the line of travel of the vehicle, with ballast weight

equal to that of a 50th percentile test dummy at each front outboard designated seating position, or, where passive restraints are present, 50th percentile test dummies as specified in Part 572 of this chapter at positions required for testing to Standard No. 208, under the applicable conditions of S7, fuel spillage shall not exceed the limits of S5.4. (39 F.R. 40857—November 21, 1974. Effective: 9/1/75)】

**S6.2 Rear moving barrier crash.** When the vehicle is impacted from the rear by a barrier moving at 30 mph, with test dummies as specified in Part 572 of this chapter at each front outboard designated seating position, under the applicable conditions of S7, fuel spillage shall not exceed the limits of S5.4.

**S6.3 Lateral moving barrier crash.** 【When the vehicle is impacted laterally on either side by a barrier moving at 20 mph with ballast weight equal to that of a 50th percentile test dummy at each front outboard designated seating position, or, where passive restraints are present, 50th percentile test dummies as specified in Part 572 of this chapter at positions required for testing to Standard No. 208, under the applicable conditions of S7., fuel spillage shall not exceed the limits of S5.4. (39 F.R. 40857—November 21, 1974. Effective: 9/1/75)】

**S6.4 Static rollover.** When the vehicle is rotated on its longitudinal axis to each successive increment of 90°, following each impact crash of S6.1, S6.2, and S6.3, fuel spillage shall not exceed the limits of S5.5.

**S7. Test conditions.** The requirements of S5 and S6 shall be met under the following conditions. Where a range of conditions is specified, the vehicle must be capable of meeting the requirements at all points within the range.

**S7.1 General test conditions.** The following conditions apply to all tests.

**S7.1.1** The fuel tank is filled to any level from 90 to 95 percent of capacity with Stoddard solvent, having the physical and chemical properties of type 1 solvent, Table I ASTM Standard D484-71, "Standard Specifications for Hydrocarbon Dry Cleaning Solvents."

**S7.1.2** The fuel system other than the fuel tank is filled with Stoddard solvent to its normal operating level.

**S7.1.3** If the vehicle has an electrically driven fuel pump that normally runs when the vehicle's electrical system is activated, it is operating at the time of a barrier crash.

**S7.1.4** 【The parking brake is disengaged and the transmission is in neutral. (39 F.R. 40857—November 21, 1974. Effective: 9/1/75)】

**S7.1.5.** 【The vehicle, including test devices and instrumentation, is loaded as follows:

(a) Except as specified in S7.1.1, a passenger car is loaded to its unloaded vehicle weight plus its rated cargo and luggage capacity weight, secured in the luggage area, plus the necessary test dummies as specified in S6, restrained only by means that are installed in the vehicle for protection at its seating position.

(b) Except as specified in S7.1.1, a multipurpose passenger vehicle, truck, or bus with a GVWR of 10,000 pounds or less is loaded to its unloaded vehicle weight, plus the necessary test dummies, as specified in S6., plus 300 pounds or its rated cargo and luggage capacity weight, whichever is less, secured to the vehicle and distributed so that the weight on each axle as measured at the tire-ground interface is in proportion to its GAWR. If the weight on any axle, when the vehicle is loaded to unloaded vehicle weight plus dummy weight, exceeds the axle's proportional share of the test weight, the remaining weight shall be placed so that the weight on that axle remains the same. Each dummy shall be restrained only by means that are installed in the vehicle for protection at its seating position. (40 F.R. 33036—August 6, 1975. Effective: 9/1/75)】

**S7.1.6** Tires are inflated to manufacturer's specifications.

**S7.2 Lateral moving barrier crash test conditions,** The lateral moving barrier crash test conditions are those specified in S8.2 of Standard No. 208, 49 CFR 571.208.

**S7.3 Rear moving barrier test conditions.** The rear moving barrier test conditions are those specified in S8.2 of Standard No. 208, 49 CFR

571.208, except for the positioning of the barrier and the vehicle. The barrier and test vehicle are positioned so that at impact—

(a) The vehicle is at rest in its normal attitude;

(b) The barrier is traveling at 30 mph with its face perpendicular to the longitudinal centerline of the vehicle; and

(c) A vertical plane through the geometric center of the barrier impact surface and perpendicular to that surface coincides with the longitudinal centerline of the vehicle.

**57.4 Static rollover test conditions.** The vehicle is rotated about its longitudinal axis, with the axis kept horizontal, to each successive increment of 90°, 180°, and 270° at a uniform rate, with 90° of rotation taking place in any time interval from 1 to 3 minutes. After reaching each 90° increment the vehicle is held in that position for 5 minutes.

**38 F.R. 22397  
August 20, 1973**



**MOTOR VEHICLE SAFETY STANDARD NO. 302****Flammability of Interior Materials—Passenger Cars, Multipurpose Passenger Vehicles,  
Trucks, and Buses****(Docket No. 3-3; Notice 4)**

This notice amends § 575.21 of Title 49 of the Code of Federal Regulations by adding a new motor vehicle safety standard, No. 302, Flammability of Interior Materials. Notices of proposed rulemaking on the subject were published on December 31, 1969 (34 F.R. 20434) and June 26, 1970 (35 F.R. 10460).

As stated in the notice of December 31, 1969, the occurrence of thousands of fires per year that begin in vehicle interiors provide ample justification for a safety standard on flammability of interior materials. Although the qualities of interior materials cannot by themselves make occupants safe from the hazards of fuel-fed fires, it is important, when fires occur in the interior of the vehicle from such sources as matches, cigarettes, or short circuits in interior wiring, that there be sufficient time for the driver to stop the vehicle, and if necessary for occupants to leave it, before injury occurs.

The question on which the public responses to the above notices differed most widely was the burn rate limit to be required. The rate proposed was 4 inches per minute, measured by a horizontal test. Some manufacturers suggested maximum burn rates as high as 15 inches per minute. The Center for Auto Safety, the Textile Fibers and By-Products Association, and the National Cotton Batting Institute, on the other hand, suggested essentially a zero burn rate, or self-extinguishment, requirement, with a vertical rather than a horizontal test. A careful study was made of the available information on this subject, including the burn rates of materials currently in use or available for use, recommendations or regulations of other agencies, and the economic and technical consequences of various possible rate levels and types of tests. A con-

siderable amount of Bureau-sponsored research has been conducted and is continuing on the subject. On consideration of this data, the Bureau has decided to retain the 4-inch-per-minute burn limit, with the horizontal test, in this standard. It has been determined that suitable materials are not available in sufficient quantities, at reasonable costs, to meet a significantly more stringent burn rate by the effective date that is hereby established. The 4-inch rate will require a major upgrading of materials used in many areas, and a corresponding improvement in this aspect of motor vehicle safety. It is important that this standard not hinder manufacturers' efforts to comply with the crash protection requirements that are currently being imposed, and that in the Bureau's judgment are of the greatest importance. Further study will be made, however, of the feasibility of, and justification for, imposing more stringent requirements with a later effective date.

As pointed out in several comments, the problem of toxic combustion by-products is closely related to that of burn rate. Release of toxic gases is one of the injury-producing aspects of motor vehicle fires, and many of the common ways of treating materials to reduce their burn rates involve chemicals that produce highly poisonous gases such as hydrogen chloride and hydrogen cyanide. The problem of setting standards with regard to combustion by-products is difficult and complex, and the subject of continuing research under Bureau auspices. Until enough is known in this area to form the basis for a standard, and to establish the proper interaction between burn rate and toxicity, this uncertainty constitutes an additional reason for not requiring self-extinguishing materials.

The proposal specified a particular commercial gas for the test burn and several comments suggested problems in obtaining the gas for manufacture testing. As is the case with all the motor vehicle safety standards, the test procedures describe the tests that the regulated vehicles or equipment must be capable of passing, when tested by the Bureau, and not the method by which a manufacturer must ascertain that capability. Any gas with at least as high a flame temperature as the gas described in the standard would therefore be suitable for manufacturer testing. To make this point clearer, and to use a more readily available reference point, the standards been reworded to specify a gas that "has a flame temperature equivalent to that of natural gas."

The dimensions of the enclosure within which the test is conducted have been changed from those proposed, in order to provide more draft-free conditions, and consequently more repeatable results. Smaller cabinets, furthermore, evidently are more generally available than larger ones. Again it should be noted that there is no necessity that manufacturers duplicate the dimensions of the test cabinet, as long as they can establish a reasonable basis for concluding that their materials will meet the requirements when tested in such a cabinet.

Several comments questioned the need for specifying the temperature and relative humidity under which the material is conditioned and the test is conducted. The foregoing discussions of the relation of the standard to manufacturer testing apply here also. The specification of temperature and relative humidity for conditioning and testing is made to preclude any arguments, in the face of a compliance test failure, that variations in test results are due to permitted variations in test conditions. The relative humidity specification has been changed from 65 percent, as proposed, to 50 percent. This humidity level represents more closely the conditions encountered in use during fairly dry weather. While it is a slightly more stringent condition, it is one in wide use for materials testing, according to the comments, and is not, in the judgment of the Bureau, a large enough change in the substance of the proposal to warrant further notice and opportunity for comment.

Several comments suggested that the standard should specify the number of specimens to be tested, with averaging of results, as is commonly found in specification-type standards. The legal nature of the motor vehicle safety standards is such, however, that sampling and averaging provisions would be inappropriate. As defined by the National Traffic and Motor Vehicle Safety Act, the standards are minimum performance levels that must be met by every motor vehicle or item of motor vehicle equipment to which they apply. Enforcement is based on independent Bureau testing, not review of manufacturer testing, and manufacturers are required to take legal responsibility for every item they produce. The result, and the intent of the Bureau in setting the standards, is that manufacturers must establish a sufficient margin of performance between their test results and the standard's requirements to allow for whatever variances may occur between items tested and items produced.

The description of portions to be tested has been changed slightly, such that the surface and the underlying materials are tested either separately or as a composite, depending on whether they are attached to each other as used in the vehicle. In the proposal, surface and underlying materials were to be tested separately regardless of how used, an element of complexity found unnecessary for safety purposes.

In response to comments with respect to materials that burn at a decreasing rate, to which the application of the test is not clear, an additional criterion has been added. If material stops burning before it has burned for 60 seconds, and does not burn more than 2 inches, it is considered to meet the requirement.

In consideration of the foregoing, § 571.21 of Title 49, Code of Federal Regulations, is amended by the addition of Standard No. 302, Flammability of Interior Materials.

*Effective date:* September 1, 1972. Because of the extensive design changes that will be necessitated by this new standard, and the lead-time consequently required by manufacturers to prepare for production, it is found, for good

cause shown, that an effective date later than one year from the issuance of this notice is in the public interest.

Issued on December 29, 1970.

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Douglas W. Toms  
Director

**36 F.R. 289**

**January 8, 1971**



**PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 302****Flammability of Interior Materials****(Docket No. 3-3; Notice 7b)**

This notice modifies the test procedures and specimen preparation requirements of Motor Vehicle Safety Standard No. 302, *Flammability of interior materials* (49 CFR 571.302). A notice of proposed rulemaking was issued on May 17, 1973 (38 FR 12934).

Several comments on the notice of proposed rulemaking suggested exempting small components on the basis of size because of the confusion caused by paragraph S4.1. This agency has not found, however, that the exemption of a component on the basis of size is consistent with safety. Rather, NHTSA finds that if a component is too small to produce an acceptable test sample, a test sample consisting of the material from which the component is fabricated should be substituted. Consequently, a new section S4.1.1 has been added to require surrogate testing of such components as switches, knobs, gaskets, and grommets which are considered too small to be effectively tested under the current procedures.

A previous notice of proposed rulemaking (36 FR 9565) suggested a scheme for testing single and composite materials that would allow the testing of certain configurations of vehicle interior materials not taken into account under the present scheme. Examples of such configurations are multi-layered composites and single layers of underlying materials that are neither padding nor cushioning materials. Comments to that notice argued that some aspects of the proposed scheme would require some duplicative testing without providing a measurable safety benefit.

In response to these arguments, it was proposed (38 F.R. 12934) that S4.2 be amended to take into account some omissions in the present

scheme and to reduce the complexity of testing single and composite materials. After reviewing the comments, the proposed scheme is adopted. Thus, the standard is amended to require single materials or composites (materials that adhere at every point of contact), any part of which is within 1/2 inch of the surface of the component, to meet the burn-rate requirements. Materials that are not part of adhering composites are subject to the requirements when tested separately. Those materials that do adhere to adjacent materials at every point of contact are subject to the requirements as composites when tested with the adjacent materials. The concept of "adherence" would replace language presently contained in the standard describing materials as "bonded, sewed, or mechanically attached." An illustrative example is included in the text of the section.

Several comments in response to the notice of proposed rulemaking requested changes in the test cabinet, as did comments in response to previous notices concerning this standard. The NHTSA has evaluated various recommendations and suggestions concerning the cabinet. No changes are proposed in this notice, however, as sufficient justification has not been found for a design change at this time.

Paragraph S5.2.1 of the standard presently provides that materials exceeding 1/2 inch in thickness are to be cut down to 1/2 inch in thickness before testing. As described in the notice of proposed rulemaking, cutting certain materials to the prescribed thickness produces a tufted surface upon which a flame front may be propagated at a faster rate than it would be upon the surface of the material before cutting, thereby creating an artificial test condition. In order

to avoid this, the requirements for the transmission rate of a flame front are amended in S4.3(a) to exclude surfaces created by cutting.

The notice of proposed rulemaking points out that a related problem has arisen concerning which surfaces of a test specimen should face the flame in the test cabinet. To answer this question and avoid unnecessary test duplication, the test procedures are amended to provide that the surface of the specimen closest to the occupant compartment air space face downward on the test frame. The test specimen is produced by cutting the material in the direction that provides the most adverse test results.

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In light of the above, Motor Vehicle Safety Standard No. 302, 49 CFR § 571.302, is amended. . . .

*Effective date:* Oct. 1, 1975.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on March 17, 1975.

James B. Gregory  
Administrator

**40 F.R. 14318**  
**March 31, 1975**

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 302

### Flammability of Interior Materials

(Docket No. 3-3; Notice 9)

On March 31, 1975, the National Highway Traffic Safety Administration (NHTSA) issued a notice modifying the test procedures and specimen preparation requirements of Motor Vehicle Safety Standard No. 302, 49 CFR 571.302, *Flammability of interior materials* (40 FR 14318). Petitions for reconsideration of the rule were received from American Motors Corporation, General Motors Corporation, White Motor Corporation, Chrysler Corporation, Volkswagen of America, Inc., Toyota Motor Sales, U.S.A., Inc., Ford Motor Company, and the Motor Vehicle Manufacturers Association of the United States, Inc.

The NHTSA notice established a process of surrogate testing for components which were too small to test without difficulty using the procedures previously prescribed by Standard No. 302. The objections raised to this new process by the petitioners were that (a) the surrogate testing procedure is an entirely new departure, and the public should have been afforded an opportunity for comment, (b) the results of surrogate testing will in certain cases differ from the results of testing the actual component, (c) the creation of a surrogate testing sample of certain materials, such as elastic cord, is impossible, and (d) the dimensions of the surrogate sample are inappropriate.

It should be fully understood that small components which would otherwise be included within the purview of Standard No. 302 are not excluded by virtue of their size. Further, the NHTSA intends to utilize a surrogate testing procedure, among other testing procedures, in the case of small components as the first step in determining whether a safety defect exists pursuant to section 152 of the National Traffic and

Motor Vehicle Safety Act. Since the testing of small components is a more difficult process, the NHTSA concluded in amending Standard No. 302 to include the surrogate testing process that the new requirement was less stringent than that currently required by the standard. Further, by amending the standard the industry could also be fully apprised of one of the methods the NHTSA intended to use to determine whether a section 152 defect existed.

Nonetheless, it appears from the petitions for reconsideration which were received that a number of manufacturers feel that they should be allowed an opportunity for comment. The NHTSA concludes their request is reasonable and the rule, as it relates to surrogate testing, is hereby revoked and is reissued as a notice of proposed rulemaking in this issue of the **FEDERAL REGISTER**.

A number of the petitioners questioned the need for including any small components within the ambit of Standard No. 302, citing the notice of proposed rulemaking (38 FR 12934, May 17, 1973) which stated that certain small components designed to absorb energy are not fire hazards. Therefore, the petitioners believe the NHTSA has reversed its previous position.

This understanding is correct. As the NHTSA said in the preamble to the proposed amendment to Standard No. 302, issued concurrently with the amendment to the Standard (March 31, 1975, 40 FR 14340):

On May 11, 1973, the NHTSA issued a notice (38 FR 12934) which proposed, inter alia, amending paragraph S4.1 of Standard No. 302 to enumerate the interior components of vehicle occupant compartment which fell within the ambit of the standard.

\* \* \* \* \*

Comments to the notice, however, have made clear that the enumeration of components, even with the proposed amendment, will continue to confuse manufacturers required to meet the standard.

\* \* \* \* \*

While some materials exposed to the occupant compartment air space are not fire hazards, the burden of ascertaining that fact should properly lie with the manufacturer.

Several petitions also questioned what safety benefits would come from applying the standard to small components. As petitioner American Motors pointed out, the purpose of Standard No. 302 is to provide sufficient time for the occupants of a vehicle to exit in case of an interior fire. Thus, even small components which are highly flammable would hasten the spreading of fires in motor vehicles, resulting in a serious hazard.

*Testing procedures.* Petitioners pointed out that while the preamble provides that the surface of the specimen closest to the occupant compartment air space face downward on test frame, this is not made entirely clear in the body of the standard itself. The standard is amended to clarify this matter. Likewise, a definition of the term "occupant compartment air space" is added, although this term was used in the notice of proposed rulemaking without raising a problem for those commenting.

*Extension of effective date of amendment.* Several petitioners asked for an extension of the effective date. As the surrogate testing procedures have been revoked and reissued as a proposed rule, the NHTSA concludes that an extension of the effective date is not necessary.

*Redesignation of Docket 3-3; Notice 7.* Through a clerical error, two notices were issued with the heading, "Docket 3-3; Notice 7" (July 11, 1973, 38 FR 18564; March 31, 1975, 40 FR 14318). The notice appearing at 38 FR 18564 is hereby redesignated "Notice 7a" and that appearing at 49 FR 14318 is redesignated "Notice 7b."

In consideration of the foregoing, Motor Vehicle Safety Standard No. 302, 49 CFR 571.302, is amended. . . .

*Effective date:* September 16, 1975.

Because this amendment relieves a restriction, it is found for good cause shown that an immediate effective date is in the public interest.

(Secs. 103, 119, Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at 49 CFR 1.51.)

Issued on September 10, 1975.

James B. Gregory  
Administrator

September 16, 1975  
40 F.R. 42746

## PREAMBLE TO AMENDMENT TO MOTOR VEHICLE SAFETY STANDARD NO. 302

### Flammability of Interior Materials

(Docket No. 3-3; Notice 11)

This notice establishes a new section, S3A. *Definitions*, in Motor Vehicle Safety Standard No. 302, 49 CFR 571.302.

On September 16, 1975, the NHTSA published in the Federal Register its response to a petition for reconsideration of Motor Vehicle Safety Standard No. 302, *Flammability of interior materials* (40 FR 42746). The rule established a definition of the term "occupant compartment air space" that was supposed to be added to "S3A. *Definitions*." The wording of the amendment was faulty, however, since the *Definitions* section had not yet been established in Standard No. 302. This notice corrects the error by adding that section to the standard.

Petitions have been received from General Motors Corporation, Motor Vehicle Manufacturers Association, American Motors Corporation, and Ford Motor Company requesting that the definition of "occupant compartment air space" in Notice 9 be revoked. These petitions will be addressed in a separate notice. The purpose of

this notice is only to promulgate the section heading which was omitted in error from Notice 9.

In light of the above, in place of the amendment numbered 1. in Docket 3-3, Notice 9 (40 FR 42746, September 16, 1975), Motor Vehicle Safety Standard No. 302 is amended by adding a new S3A. *Definitions*. . . .

Effective date: December 4, 1975. Because this amendment is of an interpretative nature and makes no substantive change in the rule, it is found for good cause shown that an immediate effective date is in the public interest.

(Sec. 103, 119 Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1407); delegation of authority at CFR 1.51)

Issued on November 28, 1975.

James B. Gregory  
Administrator

40 F.R. 56667  
December 4, 1975



## MOTOR VEHICLE SAFETY STANDARD NO. 302

### Flammability of Interior Materials—Passenger Cars, Multipurpose Passenger Vehicles, Trucks, and Buses

(Docket No. 3-3; Notice 4)

**S1. Scope.** This standard specifies burn resistance requirements for materials used in the occupant compartments of motor vehicles.

**S2. Purpose.** The purpose of this standard is to reduce the deaths and injuries to motor vehicle occupants caused by vehicle fires, especially those originating in the interior of the vehicle from sources such as matches or cigarettes.

**S3. Application.** This standard applies to passenger cars, multipurpose passenger vehicles, trucks, and buses.

#### S3A. Definitions.

“Occupant compartment air space” means the space within the occupant compartment that normally contains refreshable air. (40 F.R. 42746—September 16, 1975. Effective 9/16/75. 40 F.R. 56667—December 4, 1975. Effective: 12/4/75)

#### S4. Requirements.

**S4.1** The portions described in S4.2 of the following components of vehicle occupant compartments shall meet the requirements of S4.3: Seat cushions, seat backs, seat belts, headlining, convertible tops, arm rests, all trim panels including door, front, rear, and side panels, compartment shelves, head restraints, floor coverings, sun visors, curtains, shades, wheel housing covers, engine compartment covers, mattress covers, and any other interior materials, including padding and crash-deployed elements, that are designed to absorb energy on contact by occupants in the event of a crash.

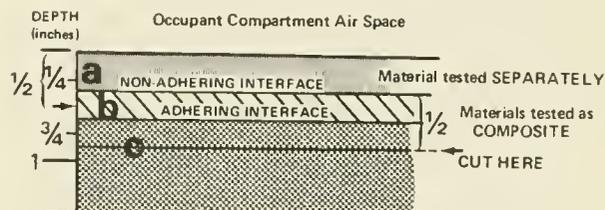
**[S4.1.1 Deleted and Reserved. 40 F.R. 42746—September 16, 1975. Effective: 9/16/75)]**

**[S4.2** Any portion of a single or composite material which is within  $\frac{1}{2}$  inch of the occupant compartment air space shall meet the requirements of S4.3.

**S4.2.1** Any material that does not adhere to other material(s) at every point of contact shall meet the requirements of S4.3 when tested separately.

**S4.2.2** Any material that adheres to other material(s) at every point of contact shall meet the requirements of S4.3 when tested as a composite with the other material(s). Material A

Illustrative Example.



has a non-adhering interface with material B and is tested separately. Part of material B is within  $\frac{1}{2}$  inch of the occupant compartment air space, and materials B and C adhere at every point of contact; therefore B and C are tested as a composite. The cut is in material C as shown, to make a specimen  $\frac{1}{2}$  inch thick. (40 F.R. 14318—March 31, 1975. Effective: 10/1/75)]

**[S4.3(a)** When tested in accordance with S5, material described in S4.1 and S4.2 shall not burn, nor transmit a flame front across its surface, at a rate of more than 4 inches per minute.

However, the requirement concerning transmission of a flame front shall not apply to a surface created by the cutting of a test specimen for purposes of testing pursuant to S5.

(b) If a material stops burning before it has burned for 60 seconds from the start of timing, and has not burned more than 2 inches from the point where timing was started, it shall be considered to meet the burn-rate requirement of S4.3(a). (40 F.R. 14318—March 31, 1975. Effective: 10/1/75) ]

## **S5. Test procedure.**

### **S5.1 Conditions.**

**S5.1.1** The test is conducted in a metal cabinet for protecting the test specimens from drafts. The interior of the cabinet is 15 inches long, 8 inches deep, and 14 inches high. It has a glass observation window in the front, a closable opening to permit insertion of the specimen holder, and a hole to accommodate tubing for a gas burner. For ventilation, it has a 1/2-inch clearance space around the top of the cabinet, ten 3/4-inch-diameter holes in the base of the cabinet, and legs to elevate the bottom of the cabinet by three-eighths of an inch, all located as shown in Figure 1.

**S5.1.2** Prior to testing, each specimen is conditioned for 24 hours at a temperature of 70° F. and a relative humidity of 50 percent, and the test is conducted under those ambient conditions.

**S5.1.3** The test specimen is inserted between two matching U-shaped frames of metal stock 1 inch wide and three-eighths of an inch high. The interior dimensions of the U-shaped frames are 2 inches wide by 13 inches long. A specimen that softens and bends at the flaming end so as to cause erratic burning is kept horizontal by supports consisting of thin, heat resistant wires, spanning the width of the U-shaped frame under the specimen at 1-inch intervals. A device that may be used for supporting this type of material is an additional U-shaped frame, wider than the U-shaped frame containing the specimen, spanned by 10-mil wires of heat-resistant composition at 1-inch intervals, inserted over the bottom U-shaped frame.

**S5.1.4** A bunsen burner with a tube of 3/8-inch inside diameter is used. The gas adjusting valve is set to provide a flame, with the tube vertical, of 1 1/2 inches in height. The air inlet to the burner is closed.

**S5.1.5** The gas supplied to the burner has a flame temperature equivalent to that of natural gas.

### **S5.2 Preparation of specimens.**

**S5.2.1** [Each specimen of material to be tested shall be a rectangle 4 inches wide by 14 inches long, wherever possible. The thickness of the specimen is that of the single or composite material used in the vehicle, except that if the material's thickness exceeds 1/2 inch, the specimen is cut down to that thickness measured from the surface of the specimen closest to the occupant compartment air space. Where it is not possible to obtain a flat specimen because of surface curvature, the specimen is cut to not more than 1/2 inch in thickness at any point. The maximum available length or width of a specimen is used where either dimension is less than 14 inches or 4 inches, respectively, unless surrogate testing is required under S4.1.1. (40 F.R. 14318—March 31, 1975. Effective: 10/1/75) ]

**S5.2.2** [The specimen is produced by cutting the material in the direction that provides the most adverse test results. The specimen is oriented so that the surface closest to the occupant compartment air space faces downward on the test frame. (40 F.R. 42746—September 16, 1975. Effective: 9/16/75) ]

**S5.2.3** Material with a napped or tufted surface is placed on a flat surface and combed twice against the nap with a comb having seven to eight smooth, rounded teeth per inch.

### **S5.3 Procedure.**

(a) Mount the specimen so that both sides and one end are held by the U-shaped frame, and one end is even with the open end of the frame. Where the maximum available width of a specimen is not more than 2 inches, so that the sides of the specimen cannot be held in the U-shaped frame, place the specimen in position on wire supports as described in S5.1.3, with one end held by the closed end of the U-shaped frame.

(b) Place the mounted specimen in a horizontal position, in the center of the cabinet.

(c) With the flame adjusted according to S5.1.4, position the bunsen burner and specimen so that the center of the burner tip is three-fourths of an inch below the center of the bottom edge of the open end of the specimen.

(d) Expose the specimen to the flame for 15 seconds.

(e) Begin timing (without reference to the period of application of the burner flame) when the flame from the burning specimen reaches a point  $1\frac{1}{2}$  inches from the open end of the specimen.

(f) Measure the time that it takes the flame to progress to a point  $1\frac{1}{2}$  inches from the clamped end of the specimen. If the flame does not reach the specified end point, time its progress to the point where flaming stops.

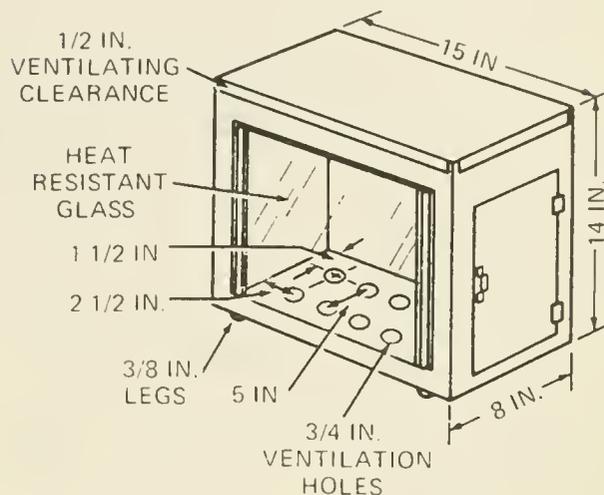
(g) Calculate the burn rate from the formula

$$B = 60 \times \frac{D}{T}$$

Where B=burn rate in inches per minute,

D=length the flame travels in inches, and

T=time in seconds for the flame to travel D inches.



36 F.R. 289

January 8, 1971



### SECTION III

- PART 571—NOTICE OF RULING REGARDING CHASSIS-CABS  
NOTICE OF RULING REGARDING CAMPERS SLIDE-IN  
AND CHASSIS-MOUNT
- PART 572—ANTHROPOMORPHIC TEST DUMMY
- PART 573—DEFECT REPORTS
- PART 574—TIRE IDENTIFICATION AND RECORDKEEPING  
TIRE CODE MARKS
- PART 575—CONSUMER INFORMATION
- PART 576—RECORD RETENTION
- PART 577—DEFECT NOTIFICATION
- PART 580—ODOMETER DISCLOSURE REQUIREMENTS
- PART 582—INSURANCE COST INFORMATION REGULATIONS
- PART 590—EMISSION INSPECTIONS
- DEPARTMENT OF THE TREASURY REGULATION RELATING TO  
IMPORTATION OF MOTOR VEHICLES AND ITEMS OF MOTOR  
VEHICLE EQUIPMENT



## **MOTOR VEHICLE SAFETY STANDARDS**

### **Notice of Ruling Regarding Chassis-Cabs**

Inquiry has been received from persons engaged in the sale of trucks, buses, and multi-purpose vehicles regarding their legal responsibility under the National Traffic and Motor Vehicle Safety Act of 1966 for assuring that vehicles sold by them are in conformity with all applicable motor vehicle safety standards. Such persons commonly purchase chassis-cabs from manufacturers and bodies or work-performing and load-carrying structures from other manufacturers and then combine the chassis-cab with the body or other structure. A regulation is being issued this date by the Federal Highway Administration defining the chassis-cab as a vehicle within the meaning of the Act, requiring that it meet all motor vehicle safety standards applicable on the date of manufacture of the chassis-cab.<sup>1</sup> Under this regulation the manufacturer of a chassis-cab manufactured subsequent to January 1, 1968, will have responsibility for compliance with all applicable motor vehicle safety standards as set forth therein and for certification of such compliance to distributors and dealers.

Section 101(5) of the National Traffic and Motor Vehicle Safety Act defines a "manufacturer" as any person engaged in the "assembling" of motor vehicles. Persons who combine chassis-cabs with bodies or similar structures are, therefore, manufacturers within the meaning of the Act. Inasmuch as the chassis-cab's manufacturer is responsible for compliance with standards under the regulation issued today, persons who add bodies or other structures to such chassis-cab are not considered manufacturers of the chassis-cab and, therefore, will not be responsible for the conformance of the chassis-cab to the standards certified by the manufacturer of the

chassis-cab. In numerous instances the chassis-cab will not be capable of complying with motor vehicle safety standard 108 because it will not be equipped with all items of lighting equipment referred to in such standard. Where vendors combine a chassis-cab which has not been certified to be in conformance with standard 108, with a body or other like structure, such vendor will be responsible for compliance with the lighting standard, and where such vendor sells the combined assemblage to another vendor, certification of compliance with the lighting standard must accompany the vehicle.

We are advised that a substantial inventory of chassis-cabs manufactured prior to the effective date of the initial motor vehicle safety standards and hence not required to comply with the same will be held by manufacturers, distributors, and dealers on January 1, 1968. These vehicles may contain various items of lighting equipment manufactured prior to the effective date of the lighting standard or be designed to accept such equipment. Under these circumstances, it does not appear appropriate to require compliance with the lighting standard when such chassis-cabs, i.e., those manufactured prior to January 1, 1968, are combined with bodies or similar structures. Section 108(a)(1) of the Act also prohibits any person from manufacturing for sale or selling any motor vehicle manufactured "after the date any applicable Federal motor vehicle safety standard takes effect under this title unless it is in conformity with such standard \*\*\*." Under this provision persons who combine the chassis-cab with a body or other structure will be responsible for (1) compliance of the combined assemblage with any motor vehicle safety standard applicable to the end use of the combined assemblage in effect on the date of manufacture of the chassis-cab, compliance with which has not already been certified

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<sup>1</sup> See F.R. Doc. 67-15174, Title 23, in Rules and Regulations Section, *supra*.

by the chassis-cab manufacturer, and (2) compliance with all applicable standards in effect on the date of manufacturer of the chassis-cab to the extent that the addition of a body or other structure to the chassis-cab affects the chassis-cab's previous conformance with applicable standards.

To insure that the person combining the chassis-cab with the body or other structure has adequate information to enable him to meet the conditions specified above, the regulation being issued concurrently with this ruling requires the

chassis-cab manufacturer to affix a label to the chassis-cab which identifies the Federal motor vehicle safety standards with which the chassis-cab fully complies for the principal end uses of such chassis-cab.

Issued in Washington, D.C., on December 29, 1967.

Lowell K. Bridwell,  
Federal Highway Administrator

**33 F.R. 29**  
**January 3, 1968**

**FEDERAL MOTOR VEHICLE SAFETY STANDARDS**  
(FHWA Ruling 68-1)

**Notice of Ruling Regarding Campers Slide-in and Chassis-Mount**

This ruling is in response to inquiries for a clarification of the applicability of Federal Motor vehicle safety standards to certain items of motor vehicle equipment commonly known as "campers" which are used mostly for recreational purposes.

A "camper" can be described generally as a portable structure designed to be loaded onto, or affixed to, a motor vehicle to provide temporary living quarters for recreation, travel, or other use. The ruling is concerned with two general categories of campers. The first, a "slide-in camper", is placed on, or slides onto a completed vehicle, usually a pickup truck. The second, a "chassis-mount camper", is mounted on a chassis-cab.

In past months the Bureau received a number of written inquiries regarding the applicability of the glazing material standard (No. 205) to slide-in campers. These persons received responses from the Bureau indicating that slide-in campers would have to comply with standard 205 under certain specified conditions. These responses of the Bureau apparently received widespread dissemination in the industry. Subsequently, additional inquiries were received from affected persons asking for clarification of the Bureau's earlier responses with respect to the question of whether standard 205 was applicable to glazing materials contained in slide-in campers sold by the manufacturer of such campers to members of the public and to dealers when not an integral part of the vehicle.

The Bureau has reconsidered this question and determined that the glazing standard is applicable to slide-in campers.

Standard 205 is applicable to "glazing materials for use in passenger cars, multipurpose passenger vehicles, motorcycles, trucks and buses."

The slide-in camper is an item of motor vehicle equipment for use in motor vehicles. As such, glazing materials contained in slide-in campers must comply with standard 205 when such campers are sold as a separate unit as well as when attached to a completed pickup truck. Additionally, manufacturers of slide-in campers must also comply with the certification requirements set forth in section 114 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1403).

Review of the Bureau's prior communications with affected persons indicates that such persons, and others who received notice of such communications, could justifiably have concluded that standard 205 was subject to an interpretation which excluded its application to slide-in campers sold directly to consumers or to dealers when not an integral part of the pickup truck. In these circumstances the Bureau does not regard it as appropriate that the interpretation of the applicability of standard 205, which this ruling announces, should be given retroactive effect. Further, in view of such reliance a reasonable time should be afforded affected parties to allow for possible necessary production adjustments. Accordingly, it is determined that with respect to slide-in campers, the interpretation announced by this ruling shall not become effective until July 1, 1968.

With regard to the chassis-mount camper, it is an integral part of the vehicle when attached to a chassis-cab as defined in § 371.3(b), Part 371, Federal Motor Vehicle Safety Standards (33 F.R. 19).

Persons who mount the chassis-mount camper to the chassis-cab are manufacturers of vehicles within the meaning of section 102(3) of the National Traffic and Motor Vehicle Safety Act

of 1966 (15 U.S.C. 1392). As such, they are to be guided by the regulation and ruling on chassis-cabs issued December 29, 1967 (33 F.R. 19 and 33 F.R. 29). Under this regulation and ruling persons combining a chassis-cab manufactured on or after January 1, 1968, with a body or like structure (in this case the chassis-mount camper) are responsible for assuring that the completed assemblage complies with all applicable standards in effect on the date of manufacture of the chassis-cab which had not previously been met

by the manufacturer of the chassis-cab, and for assuring that previously met standards have not been adversely affected by the addition of the chassis-mount camper.

Issued in Washington, D.C., on March 20, 1968.

Lowell K. Bridwell,  
Federal Highway Administrator

**33 F.R. 5020**  
**March 26, 1968**

## PREAMBLE TO PART 572—ANTHROPOMORPHIC TEST DUMMY

(Docket No. 73-8; Notice 2)

The purposes of this notice are (1) to adopt a regulation that specifies a test dummy to measure the performance of vehicles in crashes, and (2) to incorporate the dummy into Motor Vehicle Safety Standard No. 208 (49 CFR § 571.208), for the limited purpose of evaluating vehicles with passive restraint systems manufactured under the first and second restraint options between August 15, 1973, and August 15, 1975. The question of the restraint system requirements to be in effect after August 15, 1975, is not addressed by this notice and will be the subject of future rulemaking action.

The test dummy regulation (49 CFR Part 572) and the accompanying amendment to Standard No. 208 were proposed in a notice published April 2, 1973 (38 F.R. 8455). The dummy described in the regulation is to be used to evaluate vehicles manufactured under sections S4.1.2.1 and S4.1.2.2, (the first and second options in the period from August 15, 1973, to August 15, 1975), and the section incorporating the dummy is accordingly limited to those sections. The dummy has not been specified for use with any protection systems after August 15, 1975, nor with active belt systems under the third restraint option (S4.1.2.3). The recent decision in *Ford v. NHTSA*, 473 F. 2d 1241 (6th Cir. 1973), removed the injury criteria from such systems. To make the dummy applicable to belts under the third option, the agency would have to provide additional notice and opportunity for comment.

By invalidating the former test dummy specification, the decision in *Chrysler v. DOT*, 472 F. 2d 659 (6th Cir. 1972), affected the restraint options in effect before August 15, 1975, as well as the mandatory passive restraint requirements that were to be effective after that date. A manufacturer who built cars with passive

restraints under one of the options would therefore be unable to certify the cars as complying with the standard, as illustrated by the necessity for General Motors to obtain a limited exemption from the standard in order to complete the remainder of a run of 1,000 air-bag equipped cars.

The immediate purpose of this rulemaking is to reconstitute those portions of the standard that will enable manufacturers to build passive restraint vehicles during the period when they are optional. The test dummy selected by the agency is the "GM Hybrid II", a composite developed by General Motors largely from commercially available components. GM had requested NHTSA to adopt the Hybrid II on the grounds that it had been successfully used in vehicle tests with passive restraint systems, and was as good as, or better than, any other immediately available dummy system. On consideration of all available evidence, the NHTSA concurs in this judgment. One fact weighing in favor of the decision is that General Motors has used this dummy to measure the conformity of its vehicles to the passive protection requirements of Standard 208, in preparation for the announced introduction of up to 100,000 air-bag-equipped vehicles during the 1974 model year.

No other vehicle manufacturer has announced plans for the production of passive restraint systems during the optional phase, nor has any other vehicle manufacturer come forward with suggestions for alternatives to Hybrid II. The NHTSA would have considered other dummies had some other manufacturer indicated that it was planning to produce passive restraint vehicles during the option period and that some other dummy had to be selected in order to allow them to proceed with their plans. If there had

been any such plans, NHTSA would have made every effort to insure that a test device satisfactory to said manufacturer would have been selected.

This agency recognizes that since various types of dummy systems have been in use under the previous specification, any selection of one dummy, as is required by the *Chrysler* decision, will necessitate readjustments by some manufacturers. However, considering the quantity of GM's production, the scope and advanced state of its passive restraint development program, and the fact that the Hybrid II does not differ radically from other dummies currently in use, in the NHTSA's judgment that dummy represents the best and least costly choice. That conclusion has not been contradicted by the comments to the docket.

The agency will not make any final decision regarding reinstatement of mandatory passive restraint requirements without further notice and opportunity for comment. Should the agency propose mandatory passive restraint requirements, the question of the conformity of the dummy that is chosen with the instructions of the court in *Chrysler* will again be open for comment. The NHTSA strongly encourages the continuance of the dummy test programs mentioned in the comments, in the hope that any problems that may arise can be identified and resolved before the dummy specifications for later periods are issued.

The Hybrid II dummy has been found by NHTSA to be a satisfactory and objective test instrument. In sled and barrier tests conducted by GM with the GM restraint systems and in sled tests conducted by Calspan Corp. on behalf of NHTSA, the Hybrid II has produced results that are consistent and repeatable. This is not to say that each test at the same nominal speed and deceleration has produced identical values.

In testing with impact sleds, and to an even greater extent with crash-tested vehicles, the test environment itself is complex and necessarily subject to variations that affect the results. The test data show, however, that the variance from dummy to dummy in these tests is sufficiently small that a manufacturer would have no difficulty in deciding whether his vehicle would be likely to fail if tested by NHTSA.

The provisions of the dummy regulation have been modified somewhat from those proposed in the notice of proposed rulemaking, largely as a result of comments from GM. Minor corrections have been made in the drawings and materials specifications as a result of comments by GM and the principal dummy suppliers. The dummy specification, as finally adopted, reproduces the Hybrid II in each detail of its design and provides, as a calibration check, a series of performance criteria based on the observed performance of normally functioning Hybrid II components. The performance criteria are wholly derivative and are intended to filter out dummy aberrations that escape detection in the manufacturing process or that occur as a result of impact damage. The revisions in the performance criteria, as discussed hereafter, are intended to eliminate potential variances in the test procedures and to hold the performance of the Hybrid II within the narrowest possible range.

General Motors suggested the abandonment of the definition of "upright position" in section 572.4(c), and the substitution of a set-up procedure in section 572.11 to serve both as a positioning method for the performance tests and as a measurement method for the dummy's dimensions as shown in the drawings. The NHTSA does not object to the use of an expanded set-up procedure, but has decided to retain the term "upright position" with appropriate reference to the new section 572.11(i).

The structural properties test of section 572.5(c), which had proposed that the dummy keep its properties after being subjected to tests producing readings 25 percent above the injury criteria of Standard No. 208, has been revised to provide instead that the properties must be retained after vehicle tests in accordance with Standard No. 208.

The head performance criteria are adopted as proposed. The procedures have been amended to insure that the forehead will be oriented below the nose prior to the drop, to avoid interference from the nose. In response to comments by the Road Research Laboratory, American Motors, and GM, an interval of at least 2 hours between tests is specified to allow full restoration of compressed areas of the head skin.

The neck performance criteria are revised in several respects, in keeping with GM's recommendations. The pendulum impact surface, shown in Figure 4, has been modified in accordance with GM's design. The zero time point has been specified as the instant the pendulum contacts the honeycomb, the instructions for determining chordal displacement have been modified, and the pulse shape of the pendulum deceleration curve has been differently specified. The maximum allowable deceleration for the head has been increased slightly to 26g. In response to suggestions by the Road Research Laboratory and the Japan Automobile Manufacturers Association (JAMA), as well as GM, a tolerance has been specified for the pendulum's impact velocity to allow for minor variances in the honeycomb material.

With respect to the thorax test, each of the minor procedural changes requested by GM has been adopted. As with the head, a minimum recovery time is specified for the thorax. The seating surface is specified in greater detail, and the test probe orientation has been revised to refer to its height above the seating surface. The test probe itself is expressly stated to have a rigid face, by amendment to section 572.11, thereby reflecting the probes actually used by NHTSA and GM. A rigid face for the probe was also requested by Mercedes Benz.

The test procedures for the spine and abdomen tests are specified in much greater detail than before, on the basis of suggestions by GM and others that the former procedures left too much room for variance. The test fixtures for the spinal test orientation proposed by GM, and its proposed method of load application have been adopted. The parts of the dummy to be assembled for these tests are specifically recited, and an initial 50° flexion of the dummy is also specified. The rates of load application and removal, and the method of taking force readings are each specified. The direction of force application is clarified in response to a comment by Volvo.

The abdomen test is amended with respect to the initial point of force measurement, to resolve a particular source of disagreement between GM's data and NHTSA's. The boundaries of

the abdominal force-deflection curve are modified to accord with the measurements taken by GM subsequent to the issuance of the notice. The rate of force application is specified as not more than 0.1 inch per second, in response to comments by Mercedes Benz, JAMA, and GM.

The test procedures for the knee tests are revised to specify the type of seating surface used and to control the angle of the lower legs in accordance with suggestions by JAMA, the Road Research Laboratory, and GM. The instrumentation specifications of section 572.11 are amended to clarify the method of attachment and orientation of the thorax accelerometers and to specify the channel classes for the chest potentiometer, the pendulum accelerometer, and the test probe accelerometer, as requested by several comments.

The design and assembly drawings for the test dummy are too cumbersome to publish in the *Federal Register*. During the comment period on the April 2 notice, the agency maintained master copies of the drawings in the docket and placed the reproducible mylar masters from which the copies were made with a commercial blueprint facility from whom interested parties could obtain copies. The NHTSA has decided to continue this practice and is accordingly placing a master set of drawings in the docket and the reproducible masters for these drawings with a blueprint facility.

The drawings as adopted by this notice differ only in minor detail from those that accompanied the April 2 notice. The majority of the changes, incorporated into corrected drawings, have already been given to those persons who ordered copies. The letter of June 13, 1973, that accompanied the corrected drawings has been placed in the docket. The June corrections are incorporated into the final drawing package. Additional adjustments are made hereby to reflect better the weight distribution of separated segments of the dummy, to allow other materials to be used for head ballast, and to specify the instrument for measuring skin thickness. The details of these changes are recited in a memorandum incorporated into the drawing package.

Each of the final drawings is designated by the legend "NHTSA Release 8/1/73". Each

drawing so designated is hereby incorporated as part of the test dummy specifications of 49 CFR Part 572. Subsequent changes in the drawings will not be made without notice and opportunity for comment.

The incorporation of the Part 572 test dummy into Standard No. 208 makes obsolete several test conditions of the standard that had been adopted to supplement the former test dummy specifications. The location, orientation, and sensitivity of test instrumentation formerly specified by sections S8.1.15 through S8.1.18 are now controlled by Part 572 and are no longer necessary within Standard No. 208. Similarly, the use of rubber components for the head, neck and torso joints as specified in Part 572, supplant the joint setting specifications for those joints in section S8.1.10 of the standard. The NHTSA has determined that the deletion of the above portions of the Standard No. 208 will have no effect on the substantive requirements of the standard and that notice and public procedure thereon are unnecessary.

In consideration of the foregoing, Title 49, Code of Federal Regulations, is amended by the addition of Part 572, Anthropomorphic Test Dummy. . . .

In view of the pressing need for a test dummy to permit the continued development of passive restraint systems, and the fact that it presently only relates to a new option for compliance, the NHTSA finds that there is good cause to adopt an immediate effective date. Accordingly, Part 572 is effective August 1, 1973, and the amendment to Standard 208 is effective August 15, 1973.

Issued under the authority of sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act, P.L. 89-563, 15 U.S.C. 1392, 1407, and the delegation of authority at 38 F.R. 12147.

Issued on July 26, 1973.

James E. Wilson  
Associate Administrator  
Traffic Safety Programs  
**38 F.R. 20449**  
**August 1, 1973**

## PART 572—ANTHROPOMORPHIC TEST DUMMY

§ 572.1 **Scope.** This part describes the 50th percentile male anthropomorphic test dummy that is to be used for compliance testing of motor vehicles with motor vehicle safety standards.

§ 572.2 **Purpose.** The design and performance criteria specified in this part are intended to describe a measuring tool with sufficient precision to give repetitive and correlative results under similar test conditions and to reflect adequately the protective performance of a vehicle with respect to human occupants.

§ 572.3 **Application.** This section does not in itself impose duties or liabilities on any person. It is a description of a tool to measure the performance of occupant protection systems required by the safety standards that incorporate it. It is designed to be referenced by, and become a part of, the test procedures specified in motor vehicle safety standards such as Standard No. 208, Occupant Crash Protection.

### § 572.4 Terminology.

(a) The term "dummy" refers to the test device described by this part.

(b) Terms describing parts of the dummy, such as "head," are the same as names for corresponding parts of the human body.

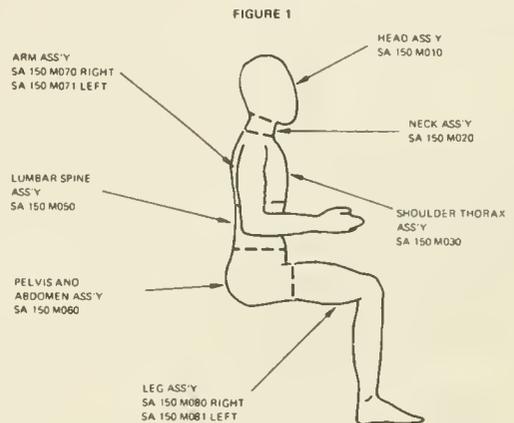
(c) The term "upright position" means the position of the dummy when it is seated in accordance with the procedures of 572.11(i).

### § 572.5 General description.

(a) The dummy consists of the component assemblies specified in Figure 1 and conforms to the drawings and specifications subreferenced by Figure 1.

(b) Adjacent segments are joined in a manner such that throughout the range of motion and

also under crash-impact conditions there is no contact between metallic elements except for contacts that exist under static conditions.



(c) The structural properties of the dummy are such that the dummy conforms to this part in every respect both before and after being used in vehicle tests specified in Standard No. 208 (§ 571.208).

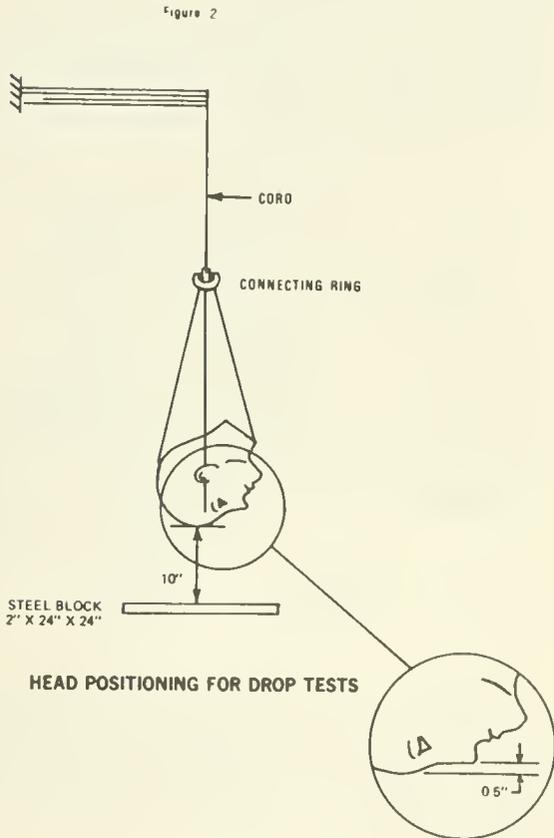
### § 572.6 Head.

(a) The head consists of the assembly shown as number SA 150 M010 in Figure 1 and conforms to each of the drawings subtended by number SA 150 M010.

(b) When the head is dropped from a height of 10 inches in accordance with paragraph (c) of this section, the peak resultant accelerations at the head's center of gravity shall be not less than 210g, and not more than 260g. The acceleration/time curve for the test shall be unimodal and shall lie at or above the 100g level for an interval not less than 0.9 milliseconds and not more than 1.5 milliseconds.

(c) Test procedure:

(1) Suspend the head as shown in Figure 2, so that the lowest point on the forehead is 0.5 inches below the lowest point on the dummy's nose when the midsagittal plane is vertical.



(2) Drop the head from the specified height onto a rigidly supported flat horizontal steel plate, 2 inches thick and 2 feet square.

(3) Allow a time period of at least 2 hours between successive tests on the same head.

**§ 572.7 Neck.**

(a) The neck consists of the assembly shown as number SA 150 M020 in Figure 1 and conforms to each of the drawings subtended by number SA 150 M020.

(b) When the neck is tested with the head in accordance with paragraph (c) of this section, the head shall rotate in reference to the pendulum's longitudinal centerline a total of  $68^\circ \pm 5^\circ$  about its center of gravity, rotating to the extent specified in the following table at each indicated point in time, measured from impact, with a chordal displacement measured at its center of gravity that is within the limits specified. The chordal displacement at time T is defined as the straight line distance between (1) the position relative to the pendulum arm of the head center of gravity at time zero, and (2) the position relative to the pendulum arm of the head center of gravity at time T as illustrated by Figure 3. The peak resultant acceleration recorded at the center of gravity of the head shall not exceed 26g, measured relative to the acceleration at time zero.

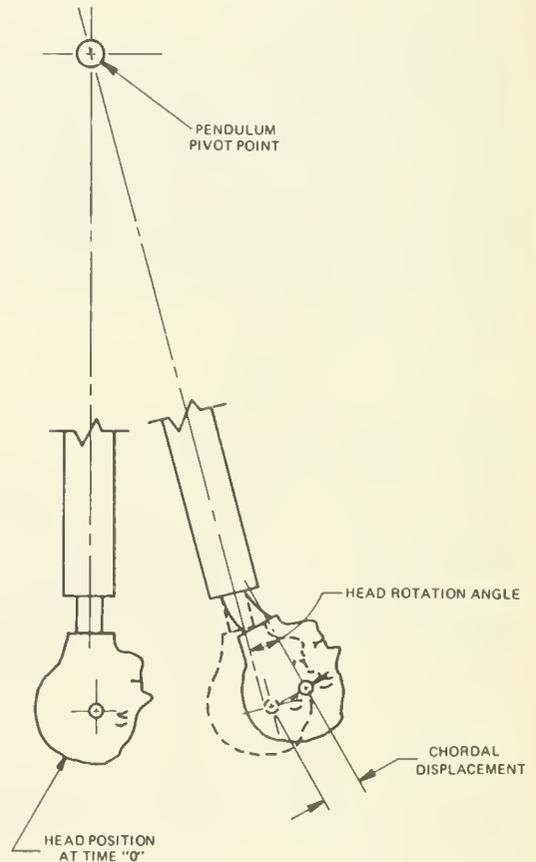


FIGURE NO. 3  
NECK COMPONENT TEST

Rotation (degrees)	Time (ms) $\pm (2 + .08T)$	Chordal Displacement (inches $\pm 0.5$ )
0	0	0.0
30	30	2.6
60	46	4.8
Maximum	60	5.5
60	75	4.8
30	95	2.6
0	112	0.0

## (c) Test procedure:

(1) Mount the head and neck on a rigid pendulum as specified in Figure 4, so that the head's midsagittal plane is vertical and coincides with the plane of motion of the pendulum's longitudinal centerline. Mount the neck directly to the pendulum as shown in Figure 4.

(2) Release the pendulum and allow it to fall freely from a height such that the velocity at impact is  $23.5 \pm 2.0$  feet per second (fps), measured at the center of the accelerometer specified in Figure 4.

(3) Decelerate the pendulum to a stop with an acceleration-time pulse described as follows:

(a) Establish 5g and 20g levels on the a-t curve.

(b) Establish  $t_1$  at the point where the rising a-t curve first crosses the 5g level,  $t_2$  at the point where the rising a-t curve first crosses the 20g level,  $t_3$  at the point where the decaying a-t curve last crosses the 20g level, and  $t_4$  at the point where the decaying a-t curve last crosses the 5g level.

(c)  $t_2 - t_1$  shall be not more than 3 milliseconds.

(d)  $t_3 - t_2$  shall be not less than 25 milliseconds and not more than 30 milliseconds.

(e)  $t_4 - t_3$  shall be not more than 10 milliseconds.

(f) The average deceleration between  $t_2$  and  $t_3$  shall be not less than 20g and not more than 24g.

(4) Allow the neck to flex without impact of the head or neck with any object other than the pendulum arm.

(5) Measure the acceleration of the pendulum with instrumentation that has a frequency

response of the channel class 60, SAE Recommended Practice J211a, December 1971.

**§ 572.8 Thorax.**

(a) The thorax consists of the assembly shown as number SA 150 M030 in Figure 1, and conforms to each of the drawings subtended by number SA 150 M030.

(b) The thorax contains enough unobstructed interior space behind the rib cage to permit the midpoint of the sternum to be depressed 2 inches without contact between the rib cage and other parts of the dummy or its instrumentation, except for instruments specified in subparagraph (d)(7) hereunder.

(c) When impacted by a test probe conforming to § 572.11(a) at 14 fps and at 22 fps in accordance with paragraph (d) of this section, the thorax shall resist with forces measured by the test probe of not more than 1400 pounds and 2100 pounds, respectively, and shall deflect by amounts not greater than 1.0 inches and 1.6 inches, respectively. The internal hysteresis in each impact shall not be less than 50%.

## (d) Test Procedure:

(1) Seat the dummy in the upright position on a smooth, flat, rigid horizontal surface without back support and extend the arms and legs horizontally forward parallel to the midsagittal plane.

(2) Place the longitudinal center line of the test probe so that it is  $17.7 \pm 0.1$  inches above the seating surface at impact.

(3) Orient the test probe so that at impact its longitudinal centerline is horizontal and in the dummy's midsagittal plane.

(4) Adjust the dummy so that the surface area on the thorax immediately adjacent to the projected longitudinal center line of the test probe is vertical.

(5) Impact the thorax with the test probe moving horizontally at the specified velocity.

(6) Guide the probe during impact so that it moves with no significant lateral, vertical, or rotational movement.

(7) Measure the horizontal deflection of the sternum relative to the thoracic spine in line with the longitudinal center line of the probe

FIGURE NO. 4  
NECK COMPONENT TEST

INERTIAL PROPERTIES OF PENDULUM  
WITHOUT TEST SPECIMEN.  
WEIGHT 65.2 LBS.  
MOMENT OF INERTIA 24.5 LB-FT SEC<sup>2</sup>  
ABOUT PIVOT AXIS

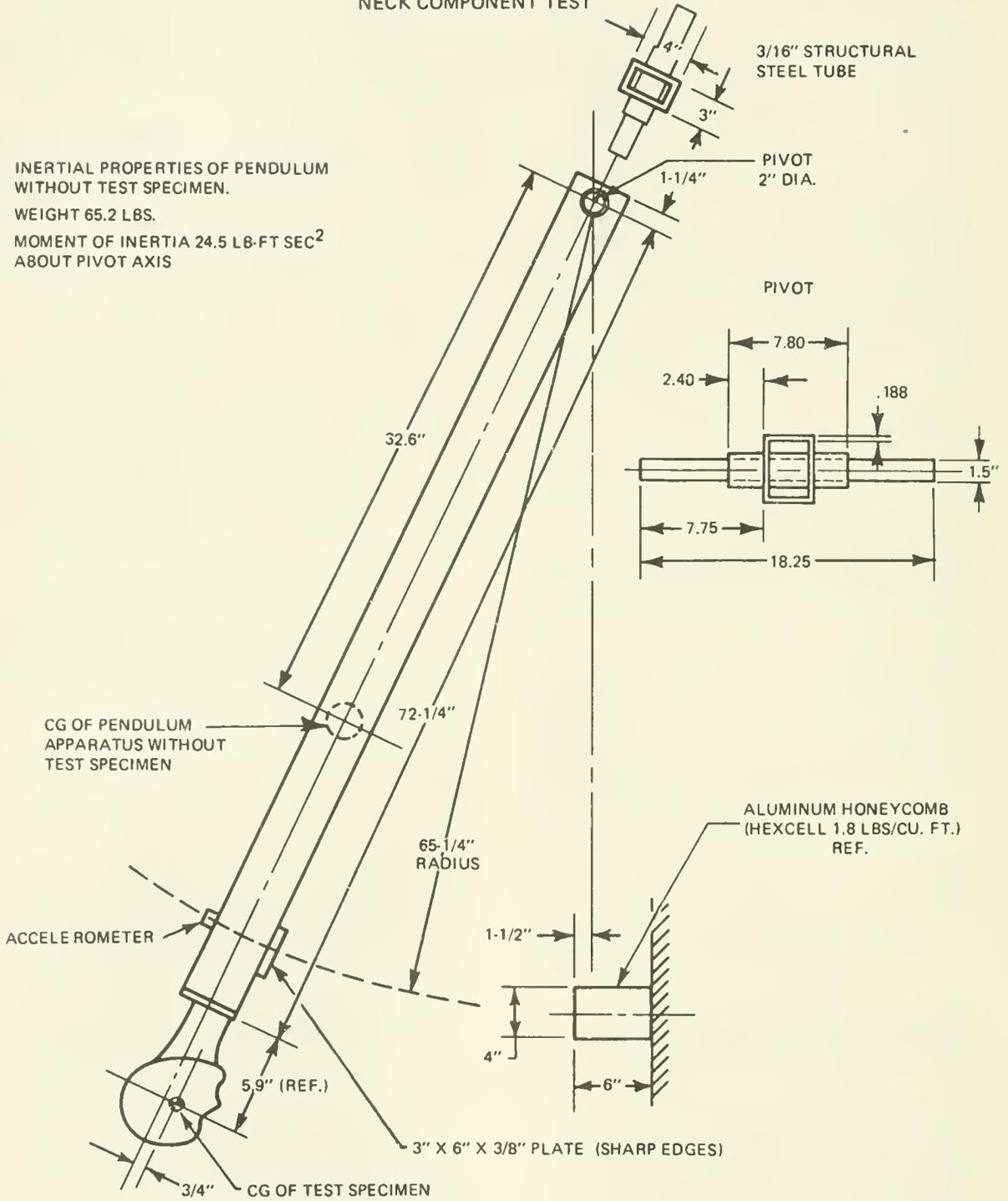
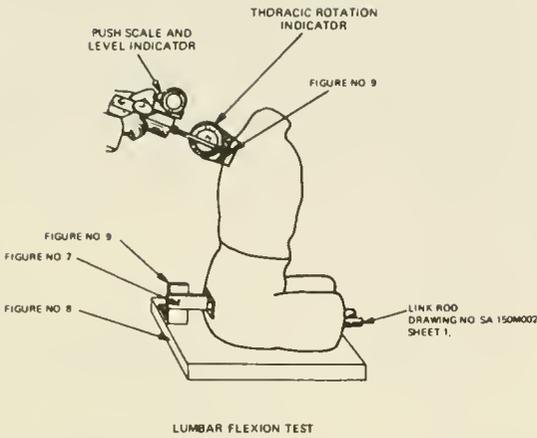


FIGURE NO 5



using a potentiometer mounted inside the thorax.

(8) Measure hysteresis by determining the ratio of the area between the loading and unloading portions of the force deflection curve to the area under the loading portion of the curve.

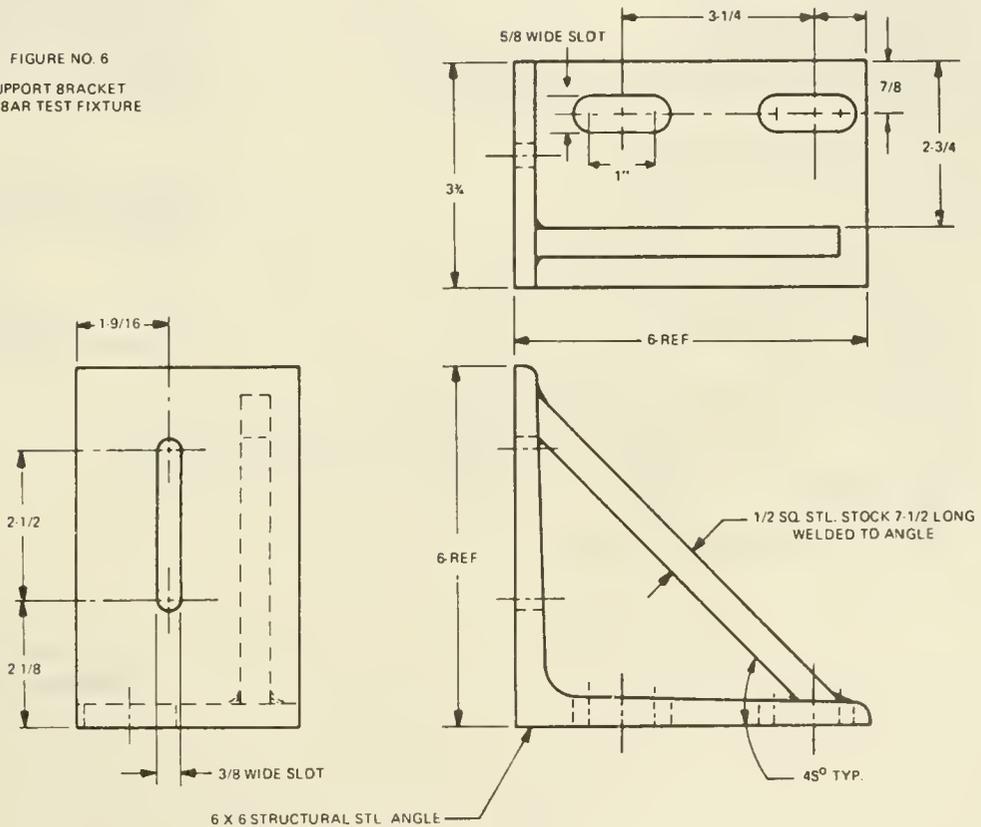
(9) Allow a time period of at least 30 minutes between successive tests on the same thorax.

**§ 572.9 Lumbar spine, abdomen, and pelvis.**

(a) The lumbar spine, abdomen, and pelvis consist of the assemblies designated as numbers SA 150 M050 and SA 150 M060 in Figure 1 and conform to the drawings subtended by these numbers.

(b) When subjected to a static force in accordance with paragraph (c) of this section, the lumbar spine assembly shall flex by an amount that permits the rigid thoracic spine to rotate from its nominal position by the number of degrees shown below at each specified force

FIGURE NO. 6  
SUPPORT BRACKET  
LUMBAR TEST FIXTURE



TOLERANCE  $\pm 1/32''$

level, and shall straighten upon removal of the force so that the thoracic spine returns to within 10 degrees of its nominal position.

Flexion (degrees)	Force ( $\pm 6$ pounds)
0	0
20	26
30	33
40	41

(c) Test procedure:

(1) Assemble the thorax, lumbar spine, pelvic, and upper leg assemblies (above the femur force transducers), omitting other assemblies, place them on the rigid horizontal fixture shown in Figure 5 with the mounting brackets for the lumbar test fixture illustrated in Figures 6 to 9, and restrain the pelvis firmly in place.

FIGURE NO. 7

MOUNTING BRACKET-LUMBAR TEST FIXTURE

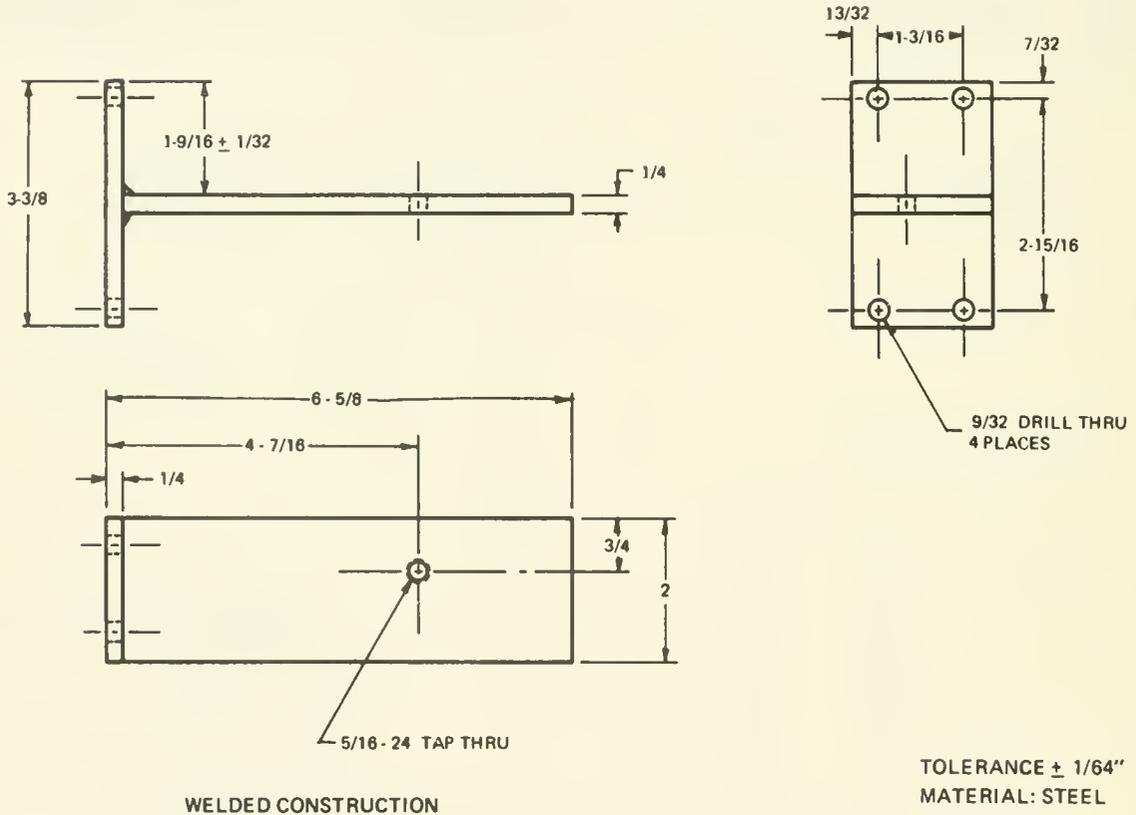
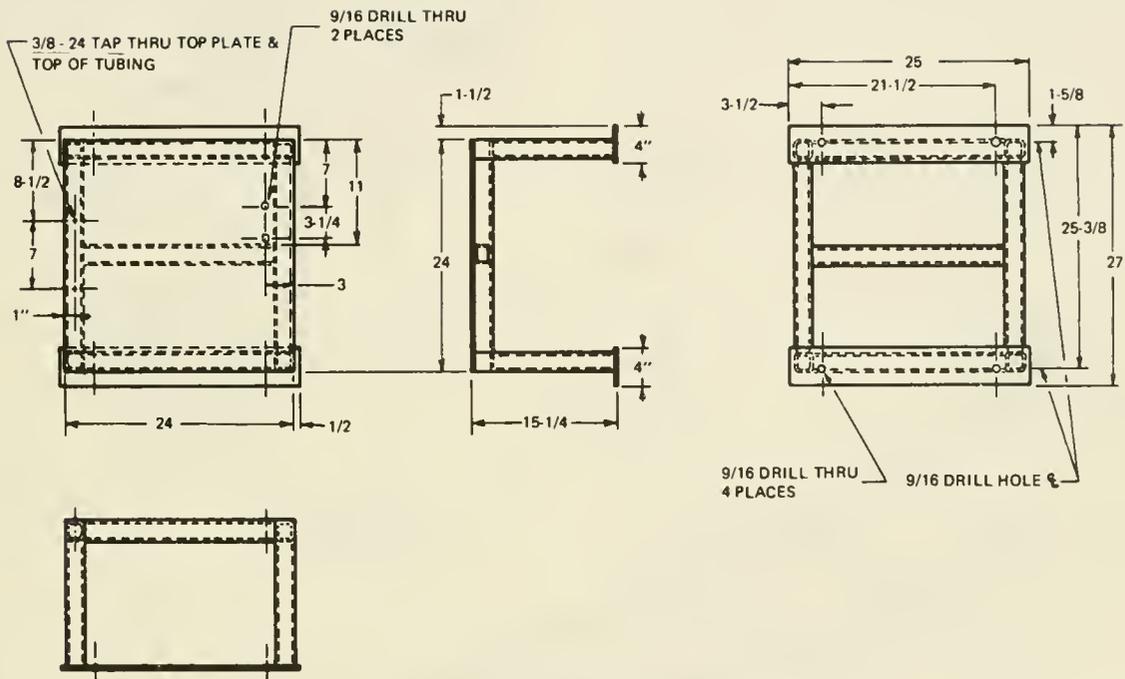


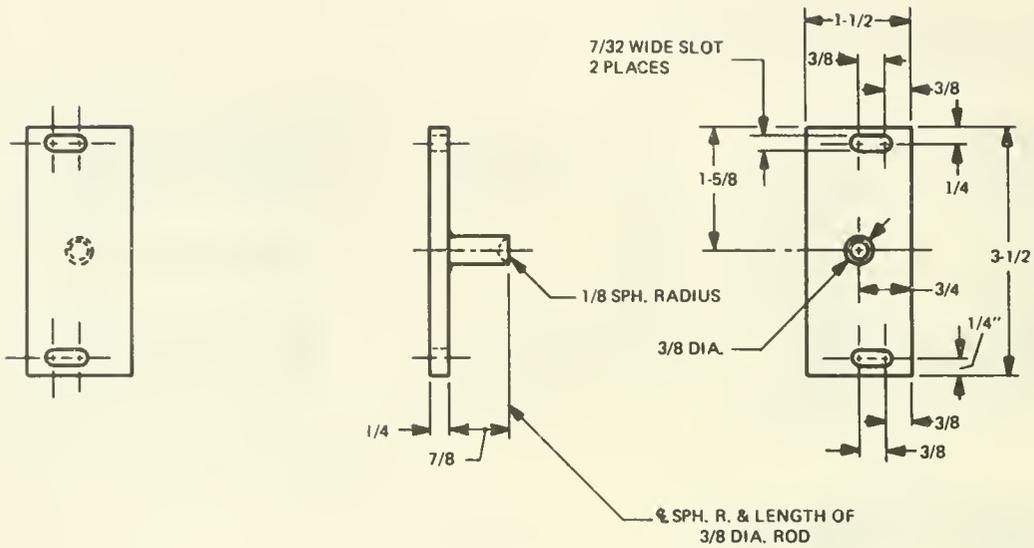
FIGURE NO. 8  
BEDPLATE - LUMBAR TEST FIXTURE



**MATL:** STEEL - 1/4 THICK PLATE & 2 X 2-1/4 WALL SQ. TUBING  
WELDED CONSTRUCTION

TOLERANCE:  $\pm 1/32"$

FIGURE NO. 9  
PUSH PLATE - LUMBAR TEST FIXTURE



WELDED CONSTRUCTION

TOLERANCE:  $\pm 1/64''$   
MATERIAL: STEEL

(2) Attach the rear mounting of the pelvis to the pelvic instrument cavity rear face at the four  $1/4''$  cap screw holes and attach the front mounting at the femur axial rotation joint. Tighten the mountings so that the pelvic-lumbar adapter is horizontal and adjust the

femur friction plungers to 120 inch-pounds torque.

(3) Flex the thorax forward  $50^\circ$  and return it to its upright position, with the rear face of the chest accelerometer mounting cavity  $3^\circ$  forward of vertical as shown in Figure 11.

(4) Apply a forward force perpendicular to the thorax instrument cavity rear face parallel to and symmetrical about the midsagittal plane 15 inches above the top surface of the pelvic-lumbar adapter. Apply the force at a rate of not more than  $2^\circ$  per second, stabilize the dummy at each flexion increment specified in paragraph (b) and record the force with an instrument mounted to the thorax with a ball joint as shown in Figure 5.

(d) When the abdomen is subjected to a static force in accordance with paragraph (e) of this section, the abdominal force-deflection curve shall be within the bounds shown in Figure 10.

metrical about the midsagittal plane, with its longitudinal centerline horizontal and perpendicular to the midsagittal plane at a point 9.2 inches above the bottom line of the buttocks, measured with the dummy in the upright position.

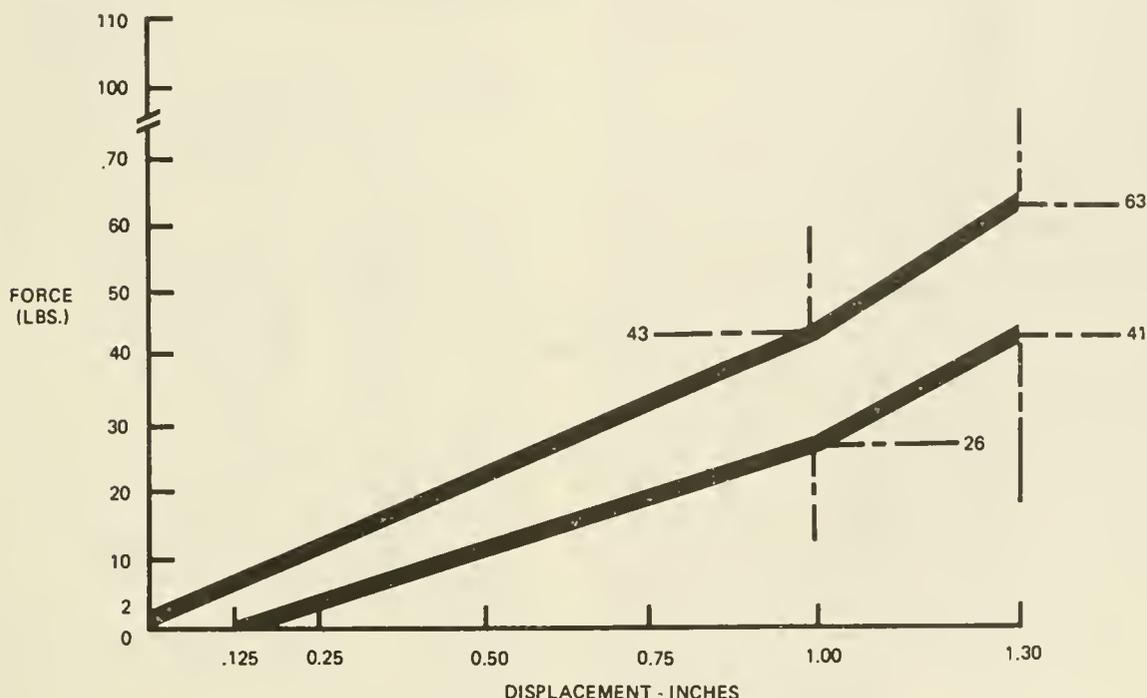
(3) Establish the zero deflection point as the point at which the cylinder first contacts the dummy.

(4) Apply a vertical downward force through the cylinder at a rate of not more than 0.1 inch per second.

(5) Guide the cylinder so that it moves without significant lateral or rotational movement.

FIGURE NO. 10

## ABDOMEN COMPONENT TEST



(e) Test procedure:

(1) Place the assembled thorax, lumbar-spine and pelvic assemblies in a supine position on a rigid horizontal surface.

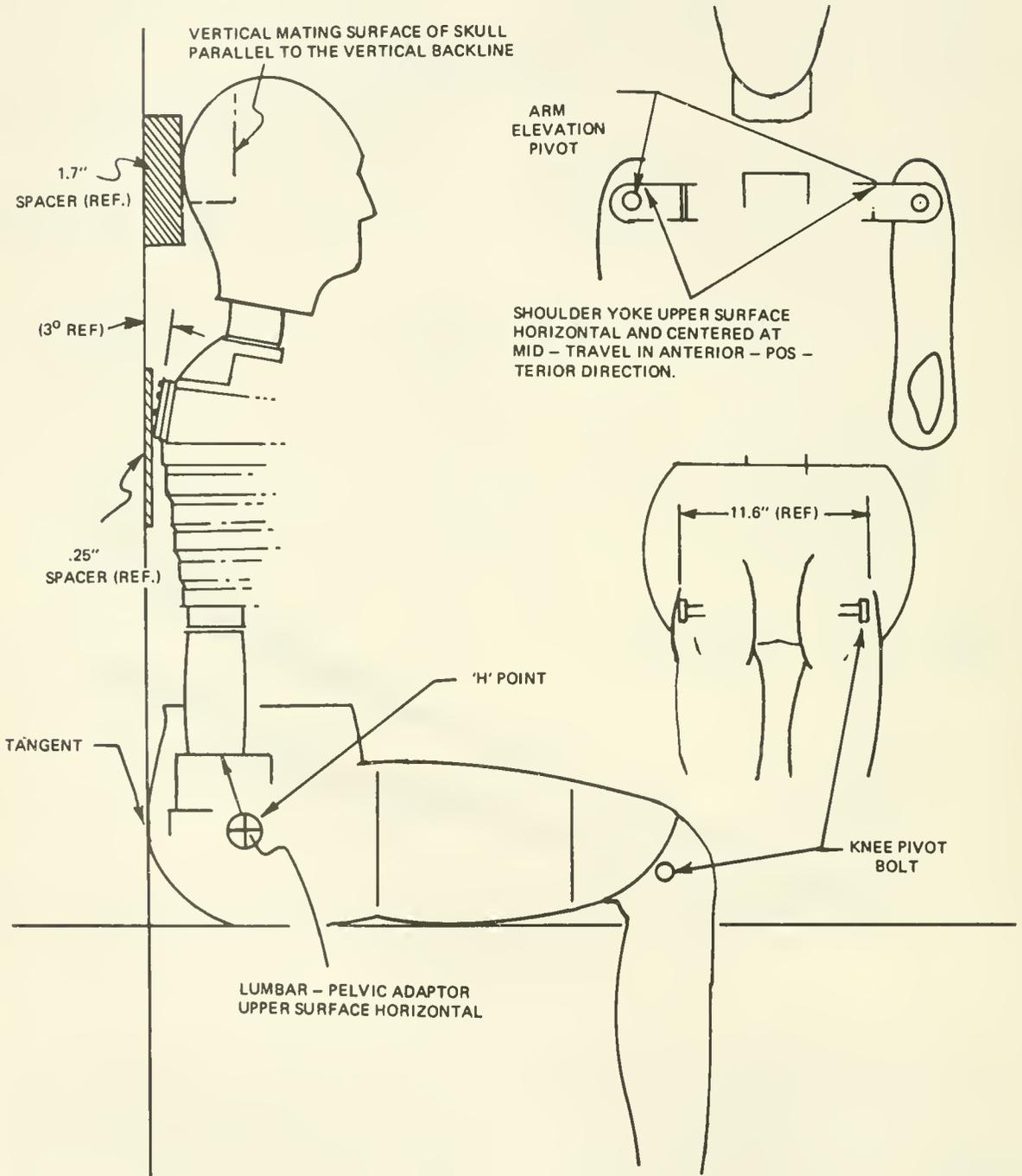
(2) Place a rigid cylinder 6 inches in diameter and 18 inches long transversely across the abdomen, so that the cylinder is sym-

#### § 572.10 Limbs.

(a) The limbs consist of the assemblies shown as numbers SA 150 M070, SA 150 M071, SA 150 M080, and SA 150 M081 in Figure 1 and conform to the drawings subtended by these numbers.

FIGURE No. 11

UPRIGHT SEATED POSITION FOR LINEAR MEASUREMENTS



(b) When each knee is impacted at 6.9 ft/sec. in accordance with paragraph (c) of this section, the maximum force on the femur shall be not more than 2500 pounds and not less than 1900 pounds, with a duration above 1000 pounds of not less than 1.7 milliseconds.

(c) Test procedure:

(1) Seat the dummy in the upright position without back support on a flat rigid steel seat that is  $17.3 \pm 0.2$  inches above a horizontal surface. Place the feet and knees 4 inches apart, measured at the respective pivot bolts, with the lower legs vertical  $\pm 2^\circ$ , measured by the lines from the midpoints of the knee pivots to the midpoints of the ankle pivots, and the feet resting on a horizontal surface.

(2) Position the dummy so that the rear-most surfaces of the lower legs are not less than 5 inches and not more than 6 inches forward of the forward edge of the seat.

(3) Align the test probe specified in § 572.11(a) so that at impact its longitudinal centerline coincides within  $\pm 2^\circ$  with the longitudinal centerline of the femur.

(4) Impact the knee with the test probe moving horizontally and parallel to the midsagittal plane at the specified velocity.

(5) Guide the probe during impact so that it moves with no significant lateral, vertical, or rotational movement.

#### § 572.11 Test conditions and instrumentation.

(a) The test probe used for thoracic and knee impact tests is a cylinder 6 inches in diameter that weighs 51.5 pounds including instrumentation. Its impacting end has a flat right face that is rigid and that has an edge radius of 0.5 inches.

(b) Accelerometers are mounted in the head on the horizontal transverse bulkhead shown in the drawings subreferenced under assembly No. SA 150 M010 in Figure 1, so that their sensitive axes intersect at a point in the midsagittal plane 0.5 inches above the horizontal bulkhead and 1.9 inches forward of the vertical mating surface of the skull with the skull cover, and so that their seismic mass centers are in a plane parallel to the upper surface of the bulkhead. One accelerometer is aligned with its sensitive axis

perpendicular to the horizontal bulkhead in the midsagittal plane and with its seismic mass center not more than 0.3 inches from the axial intersection point. Another accelerometer is aligned with its sensitive axis parallel to the horizontal bulkhead and perpendicular to the midsagittal plane, and with its seismic mass center not more than 1.3 inches from the axial intersection point. A third accelerometer is aligned with its sensitive axis parallel to the horizontal bulkhead in the midsagittal plane, and with its seismic mass center not more than 1.3 inches from the axial intersection point.

(c) Accelerometers are mounted in the thorax by means of a bracket attached to the rear vertical surface (hereafter "attachment surface") of the thoracic spine so that their sensitive axes intersect at a point in the midsagittal plane 0.8 inches below the upper surface of the plate to which the neck mounting bracket is attached and 3.2 inches perpendicularly forward of the surface to which the accelerometer bracket is attached. One accelerometer has its sensitive axis oriented parallel to the attachment surface in the midsagittal plane, with its seismic mass center not more than 1.3 inches from the intersection of the sensitive axes specified above. Another accelerometer has its sensitive axis oriented parallel to the attachment surface and perpendicular to the midsagittal plane, with its seismic mass center not more than 0.2 inches from the intersection of the sensitive axes specified above. A third accelerometer has its sensitive axis oriented perpendicular to the attachment surface in the midsagittal plane, with its seismic mass center not more than 1.3 inches from the intersection of the sensitive axes specified above. Accelerometers are oriented with the dummy in the upright position.

(d) A force-sensing device is mounted axially in each femur shaft so that the transverse centerline of the sensing element is 4.25 inches from the knee's center of rotation.

(e) The outputs of acceleration and force-sensing devices installed in the dummy and in the test apparatus specified by this Part are recorded in individual data channels that conform to the requirements of SAE Recommended Practice J211a, December 1971, with channel classes as follows:

- (1) Head acceleration—Class 1000.
- (2) Pendulum acceleration—Class 60.
- (3) Thorax acceleration—Class 180.
- (4) Thorax compression—Class 180.
- (5) Femur force—Class 600.

(f) The mountings for sensing devices have no resonance frequency within a range of 3 times the frequency range of the applicable channel class.

(g) Limb joints are set at 1g, barely restraining the weight of the limb when it is extended horizontally. The force required to move a limb segment does not exceed 2g throughout the range of limb motion.

(h) Performance tests are conducted at any temperature from 66° F. to 78° F. and at any relative humidity from 30% to 70%.

(i) For the performance tests specified in sections 572.8 and 572.10, the test dummy is positioned in accordance with Figure 11 as follows:

(1) The dummy is placed on the test surface so that its midsagittal plane is vertical.

(2) The pelvis is adjusted so that the upper surface of the lumbar-pelvic adapter is horizontal.

(3) The shoulder yokes are adjusted so that they are at the midpoint of their anterior posterior travel with their upper surfaces horizontal.

(4) The dummy is adjusted so that its shoulders and buttocks are tangent to a transverse horizontal plane.

(5) The upper legs are positioned symmetrically about the midsagittal plane so that the distance between the knee pivot bolt heads is 11.6 inches.

(j) The dummy's dimensions, as specified in drawing number SA 150 M002, are determined as follows:

(1) With the dummy seated as specified in paragraph (i), the head is adjusted and

secured so that its occiput is 1.7 inches forward of the transverse vertical plane with the vertical mating surface of the skull with its cover parallel to the transverse vertical plane.

(2) The thorax is adjusted and secured so that the rear surface of the chest accelerometer mounting cavity is inclined 3° forward of vertical.

(3) Chest and waist circumference and chest depth measurements are taken with the dummy positioned in accordance with (1) and (2).

(4) The chest skin and abdominal sac are removed and all following measurements are made without them.

(5) Seated height is measured from the seating surface to the uppermost point on the head-skin surface.

(6) Shoulder pivot height is measured from the seating surface to the center of the arm elevation pivot.

(7) H-point locations are measured from the seating surface to the center of the holes in the pelvis flesh covering in line with the hip motion ball.

(8) Knee pivot distance from the backline is measured to the center of the knee pivot bolt head.

(9) Knee pivot distance from floor is measured from the center of the knee pivot bolt head to the bottom of the heel when the foot is horizontal and pointing forward.

(10) Shoulder width measurement is taken at arm elevation pivot center height with the centerlines between the elbow pivots and the shoulder pivots vertical.

(11) Hip width measurement is taken at widest point of pelvic section.

(k) The dummy is clothed in form fitting cotton stretch garments with short sleeves and mid-calf length pants.

38 F.R. 20449  
August 1, 1973

**PREAMBLE TO PART 573—DEFECT REPORTS****(Docket No. 69-31; Notice No. 2)**

On December 24, 1969, a notice of proposed rulemaking entitled, "Defect Reports", was published in the *Federal Register* (34 F.R. 20212). The notice proposed requirements for reports and information regarding defects in motor vehicles, to be submitted to the National Highway Traffic Safety Administration by manufacturers of motor vehicles pursuant to sections 112, 113, and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1401, 1402, and 1407).

The notice requested comments on the proposed requirements. All comments received have been considered and some are discussed below.

Several comments asked whether both the fabricating manufacturer and the importer of imported vehicles were required to comply with all the proposed requirements. A similar question was asked in regard to manufacturers of incomplete vehicles and subsequent manufacturers of the same vehicles. In response to the comments, § 573.3 provides that in the case of imported vehicles, compliance by either the fabricating manufacturer or the importer of the imported vehicle with §§ 573.4 and 573.5 of this part, with respect to a particular defect, shall be considered compliance by both. In the case of vehicles manufactured in two or more stages, compliance by either the manufacturer of the incomplete vehicle or one of the subsequent manufacturers of the vehicle with §§ 573.4 and 573.5 of this part, with respect to a particular defect, shall be considered compliance by both the incomplete vehicle manufacturer and the subsequent manufacturers.

Many comments requested that the time for the initial filing of the direct information report be increased to allow opportunity for the extensive and complex testing often necessary to determine whether a defect is safety-related. As

proposed, the time for initially filing the report was within 5 days after the discovery of a defect that the manufacturer subsequently determined to be safety-related. In response to these comments, § 573.4(b) provides that the report shall be submitted by the manufacturer not more than 5 days after he or the Administrator has determined that a defect in the manufacturer's vehicles relates to motor vehicle safety.

Several comments requested the deletion of one or more items of information proposed for inclusion in the defect information report. Objections to providing an evaluation of the risk of accident due to the defect, a list of all incidents related to the defect, and an analysis of the cause of the defect were based on the ground that the information would be inherently speculative. The proposed requirements for these three items of information have been deleted. In place of the list of incidents, § 573.4(c)(6) requires a chronology of all principal events that were the basis for the determination of the existence of a safety-related defect. In accordance with the deletion of the list of incidents, the provision in the proposal requiring quarterly reports to contain information concerning previously unreported incidents has also been deleted.

Several comments stated that the requirement in the proposal for the submission of a copy of all communications sent to dealers and purchasers concerning a safety-related defect would create an unreasonable burden on the manufacturers. The comments reported that the manufacturers would be required to submit to the Administration a large volume of useless correspondence between the manufacturers and individual dealers or purchasers. To mitigate this problem, § 573.4(c)(8) provides that the manufacturers shall submit to the Administration only those communications that are sent to more

than one dealer or purchaser. For the same reason, the requirement in § 573.7 that a manufacturer submit a copy of all communications, other than those required under § 573.4(c)(8), regarding any defect, whether or not safety-related, in his vehicles, is also limited to communications sent to more than one person.

Many comments requested that a regular schedule for submitting quarterly reports be established. They suggested that this be accomplished by requiring that the first quarter for submitting a quarterly report with respect to a particular defect be the calendar quarter in which the defect information report for the defect is initially submitted. As proposed, the first quarter began on the date on which the defect information report was initially submitted. Several of these comments also objected to the proposed requirements for submitting both quarterly reports and annual defect summaries on the ground that the latter would be partially redundant. In response to these comments, the proposed requirement for filing a separate series of quarterly reports for each defect notification campaign has been deleted. Instead, § 573.5(a) requires that each manufacturer submit a quarterly report not more than 25 working days after the close of each calendar quarter. The information specified in § 573.5(c) is required to be provided with respect to each notification campaign, beginning with the quarter in which the campaign was initiated. Unless otherwise directed by the Administration, the information for each campaign is to be included in the quarterly reports for six consecutive quarters or until corrective action has been completed on all

defective vehicles involved in the campaign, whichever occurs sooner.

The proposed requirement for filing annual summaries has been deleted. Instead, § 573.5(d) requires that the figures provided in the quarterly reports under paragraph (c) (5), (6), (7), and (8) of § 573.5 be cumulative. In addition, § 573.5(b) requires that each quarterly report contain the total number of vehicles produced during the quarter for which the report is submitted.

Several changes have been made for the purpose of clarification, § 573.4(c)(8) requires that manufacturers submit three copies of the communications specified in that section. In response to questions concerning the use of computers for maintaining owner lists, a reference to computer information storage devices and card files has been added to § 573.6 to indicate that they are suitable. A reference to first purchasers and subsequent purchasers to whom a warranty has been transferred, and any other owners known to the manufacturer, has been added to the same section to make clear that the owner list is required to include both types of purchasers as well as other known owners.

Effective date: October 1, 1971.

Issued on February 10, 1971.

Douglas W. Toms,  
Acting Administrator, National Highway Traffic Safety Administration.

36 F.R. 3064  
February 17, 1971

**PREAMBLE TO AMENDMENT TO PART 573—DEFECT REPORTS**

(Docket No. 69-31; Notice 5)

This notice amends the Defect Reports regulation (49 CFR Part 573) to require manufacturers to submit vehicle identification numbers as part of the information furnished by them to the NHTSA. A notice of proposed rulemaking regarding this subject was published November 7, 1972 (37 F.R. 23650).

The purpose of including VIN's in defect reports would be to improve the notification of owners of vehicles involved in safety defect notification campaigns. The State Farm Insurance Company had suggested, for example, that insurance companies could use VIN's to identify vehicles which they insure, and to themselves notify owners of record. The Center for Auto Safety also requested the inclusion of VIN's in defect reports, so it could more readily inform persons who inquire whether particular vehicles were subject to campaigns. Other possible uses, it was noted, would be that State and local inspection facilities could determine, as part of inspection programs, whether particular vehicles had been subjected to campaigns, and if so, whether they had been repaired.

The proposal would have required the submission in the "defect information report" (§ 573.4), within five days of the defect determination, of the vehicle identification number for each vehicle potentially affected by the defect. It also proposed to substitute "line" for "model" as one of the identifying classifications describing potentially affected vehicles.

The comments demonstrated that the vehicle identification number is a useful tool for locating second and later owners of vehicles. In a study conducted by the Ford Motor Company and the State Farm Insurance Company, a fairly significant percentage of owners who either had not received or responded to the initial notification

mailed by the manufacturer did respond to subsequent letters sent on the basis of the VIN.

As a result of comments received, however, the NHTSA has decided that vehicle identification numbers should only be required to be supplied in the second "quarterly report", approximately six months after a campaign is initiated, rather than in the defect information report as proposed. Only the VIN's for vehicles not repaired by that date are required to be provided. The NHTSA believes this approach will provide the safety benefits to be derived from having publicly available lists of defective vehicle VIN's and will also reduce duplication and facilitate the agency's efforts to compile and report the information.

The NHTSA requests that vehicle identification numbers be submitted in a form suitable for automatic data processing (magnetic tape, discs, punched cards, etc.) when more than 500 numbers are reported for any single campaign. While not required by this notice, the use of automatic data processing for large campaigns will facilitate the dissemination of the information for the agency. The agency may include specific requirements in this regard at a later time.

The comments argued that the benefits of having VIN's available during the initial stages of a campaign are limited, and that the compilation of identification numbers for every vehicle in a campaign would create significant problems for manufacturers related to conducting campaigns. The NHTSA believes these comments to have merit. It is clear that the chief use of VIN's will be to notify other than first purchasers, *i.e.*, owners of older vehicles, as the names of these owners will not be available to manufacturers. By delaying the furnishing of VIN's until the filing of the second quarterly report, the VIN's reported will represent to a greater

degree the names and addresses of second and later owners. The later reporting will also reduce the possibility that first purchasers will receive duplicate notices.

Many comments challenged generally the utility of the VIN in notification campaigns. Other comments complained that insurance companies might abuse the information; for example, by cancelling policies on defective vehicles. Still others believed VIN's to be privileged proprietary information, both taken separately and when combined with other information submitted pursuant to Part 573.

While it is true that the effectiveness of the requirement will depend to an extent upon the voluntary activities of third parties, the NHTSA does not view this as a reason not to issue the requirement. The offers of insurance companies and other groups to participate in notification campaigns appear to be reasonable and properly motivated. There has been no evidence brought to the NHTSA's attention to support the allegations of possible misuse of the information by insurance companies.

The agency also cannot agree that information identifying defective vehicles is or relates to proprietary information. The comments on this point seem to equate what may be embarrassing information with notions of confidentiality.

There is no basis under existing statutory definitions of confidentiality for including within them VIN's or other information identifying defective vehicles.

The proposed substitution of "line" for "model" in the descriptive information for vehicles was opposed in one comment because the term "line" is apparently more suited for passenger cars than other vehicle types. The comment indicated that "model" is a more appropriate term for trucks. In light of this comment, the terms are specified as alternatives in the regulation.

In light of the above, Part 573 of Title 49, Code of Federal Regulations, "Defect Reports," is amended. . . .

*Effective date:* May 6, 1974.

(Sections 103, 112, 113, and 119, Pub. L. 89-563, 80 Stat. 718; 15 U.S.C. 1392, 1401, 1402, 1407, and the delegation of authority at 49 CFR 1.51 Office of Management and Budget Approved 04-R5628.)

Issued on January 30, 1974.

James B. Gregory  
Administrator

**39 F.R. 4578**  
**February 5, 1974**

## PREAMBLE TO AMENDMENT TO PART 573—DEFECT REPORTS

(Docket No. 69-31; Notice 6)

This notice responds to petitions for reconsideration of the amendment of 49 CFR Part 573, "Defect Reports," requiring the submission to NHTSA of the vehicle identification numbers (VIN) of motor vehicles found to contain safety related defects. The amendment was published February 5, 1974 (39 F.R. 4578). Except insofar as granted by this notice, the requests of the petitioners are denied.

Two petitions for reconsideration, one from General Motors Corporation and the other from Chrysler Corporation, were received. Both petitions objected to the requirement that VIN's be reported in the second quarterly report filed subsequent to the initiation of the defect notification campaign. Both pointed out that the NHTSA had stated in the amendment published February 5, 1974, that it was desirable to defer reporting VIN's until six months had passed from the time a notification campaign had begun. Both petitioners argued that the time for filing the second quarterly report is frequently less than six months, and suggested that the third quarterly report rather than the second was the more appropriate quarterly report to contain vehicle identification numbers. General Motors indicated that the average elapsed time from the initiation of a notification campaign to the filing of the second quarterly report is four and one-half months, while the elapsed time until the filing of the third quarterly report is, on the average, seven and one-half months. The NHTSA still believes it reasonable to allow a six-month period from the initiation of the campaign to elapse before VIN's are submitted. Accordingly, the NHTSA has granted the petitions insofar as they request that VIN's be reported in the third quarterly report submitted to NHTSA by the manufacturer.

Chrysler objected to the VIN reporting requirement generally, on the basis that it is unnecessary and will not produce the desired results. It is requested that an evaluation of the usefulness of the requirement be conducted after it is in effect, and that appropriate modifications be made if the requirement fails to achieve the desired results. General Motors requested that NHTSA maintain a public record of requests for VIN's so that future consideration can be given to the extent that the data is useful, and to whom it is useful. The NHTSA believes that public availability of VIN's will facilitate locating and repairing defective vehicles no longer in the hands of first purchasers. At the same time it agrees to conduct an evaluation of the efficacy of the requirement once it is in effect. The extent of usage is a relevant aspect of an evaluation of this type, and the NHTSA sees no prohibition against maintaining a public record of requests for the information.

The amended regulation will be effective August 6, 1974, and as such will require all third quarterly reports submitted to NHTSA on or after that date to contain appropriate vehicle identification numbers. The effective date has been changed from May 6, 1974, as a result of the change requiring the third rather than the second quarterly report to contain VIN's. As a practical matter, VIN's will be required to be reported in the third quarterly report for all defect notification campaigns initiated on or after January 1, 1974 (NHTSA campaign numbers 74-0001 and subsequent campaigns).

In light of the above, 49 CFR Part 573, Defect Reports, is amended by revising § 573.5(e) . . . .

Effective: August 6, 1974

Effective date: August 6, 1974.

Issued on May 6, 1974.

(Secs. 103, 112, 113, and 119, Pub. L. 89-563, 80 Stat. 718; 15 U.S.C. 1392, 1401, 1402, 1407, and the delegation of authority at 49 CFR 1.51; Office of Management and Budget approved 04-R5628.)

Gene G. Mannella  
Acting Administrator

**39 F.R. 16469**

**May 9, 1974**

## PREAMBLE TO AMENDMENT TO PART 573—DEFECT REPORTS

(Docket No. 74-7; Notice 2)

This notice amends Part 573—"Defect Reports" by revoking the requirement that manufacturers of motor vehicles report quarterly to the National Highway Traffic Safety Administration production figures for vehicles manufactured or imported during the calendar quarter. A notice of proposed rulemaking in which this amendment was proposed was published January 15, 1974 (39 FR 1863).

The NHTSA is revoking the requirement for the reporting of quarterly production figures because it has found that the value of the information has not justified the burden on manufacturers of providing it. This amendment will eliminate the need for manufacturers to file quarterly reports unless they are conducting notification campaigns during the calendar quarter.

The notice of proposed rulemaking of January 15, 1974, proposed to extend the applicability of the Defect Reports regulations to include manufacturers of motor vehicle equipment, and to modify the information required to be reported. Since the issuance of this proposal, Congress has amended sections of the National Traffic and Motor Vehicle Safety Act which deal with manufacturers' responsibilities for safety related defects in motor vehicles and motor vehicle equipment. (Pub. L. 93-492, Oct. 27, 1974) These amendments to the Safety Act in part enlarge the responsibilities of manufacturers of motor vehicle equipment for safety related defects. Ultimately the Defect Reports regulations will reflect completely the expanded scope of the statutory amendments. While the language of

the proposed rule of January 15, 1974, is in most cases sufficiently broad to reflect these statutory changes, the scope of the proposal under the previous language of the Safety Act is materially different. Consequently, the NHTSA has decided to issue a further notice, with opportunity for public comment, that specifically reflects the expanded scope of the statutory amendments. This notice will be issued at some time following the effective date (December 26, 1974) of the statutory amendments.

The NHTSA has determined, however, that relief from the production-figures reporting requirements should not be further deferred, and by this notice deletes those requirements from the Defect Reports regulation.

In light of the above, 49 CFR Part 573, Defect Reports, is amended by revoking and reserving paragraph (b) of section 573.5 ("Quarterly reports").

Effective date: December 10, 1974. This amendment relieves a restriction and imposes no additional burden on any person. Consequently good cause exists and is hereby found for an effective date less than 30 days from publication.

(Secs. 108, 112, 113, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1397, 1401, 1402, 1408; delegation of authority at 49 CFR 1.51)

Issued on December 4, 1974.

James B. Gregory  
Administrator

**39 F.R. 43075**  
**December 10, 1974**



## PART 573—DEFECT REPORTS

(Docket No. 69-31; Notice No. 2)

*Sec.*

- 573.1 Scope.**
- 573.2 Purpose.**
- 573.3 Application.**
- 573.4 Defect information report.**
- 573.5 Quarterly reports.**
- 573.6 Owner lists.**
- 573.7 Notices, bulletins and other communications.**
- 573.8 Address for submitting all required reports and other information.**

**AUTHORITY:** The provisions of this Part 573 issued under secs. 112, 113, and 119, National Traffic and Motor Vehicle Safety Act of 1966, as amended, 15 U.S.C. 1401, 1402, 1407; delegation of authority at 49 CFR 1.51, 35 F.R. 4955.

### § 573.1 Scope.

This part specifies manufacturer requirements for reporting safety-related defects to the National Highway Traffic Safety Administration, providing quarterly reports on defect notification campaigns and vehicle production, providing copies of communications with dealers and purchasers concerning defects, and maintaining owner lists.

### § 573.2 Purpose.

The purpose of this part is to enable the Administration to conduct a continuing analysis of the adequacy of manufacturers' defect notifications and corrective action, and the owner response, and to compare the defect incidence rate among different groups of motor vehicles.

### § 573.3 Application.

This part applies to all manufacturers of complete or incomplete motor vehicles. In the case of vehicles manufactured outside the United States, the term "vehicles" herein refers to ve-

hicles imported into the United States, and compliance by either the fabricating manufacturer or the importer of the vehicle with §§ 573.4 and 573.5, with respect to a particular defect, shall be considered compliance by both. In the case of vehicles manufactured in two or more stages, compliance by either the manufacturer of the incomplete vehicle or one of the subsequent manufacturers of the vehicle with §§ 573.4 and 573.5, with respect to a particular defect, shall be considered compliance by both the incomplete vehicle manufacturer and the subsequent manufacturers.

### § 573.4 Defect information report.

(a) Each manufacturer shall furnish a defect information report to the Administration for each defect in his vehicles that he or the Administrator determines to be related to motor vehicle safety.

(b) Defect information reports required under paragraph (a) of this section shall be submitted not more than 5 working days after a defect in a vehicle has been determined to be safety-related. Items of information required by paragraph (c) of this section that are not available within that period shall be submitted as they become available. Each manufacturer submitting new information relative to a previously submitted report shall refer to the notification campaign number, after such number has been assigned by the Administration.

(c) Except as provided in paragraph (b) of this section, each defect information report shall contain the following information:

- (1) Name of manufacturer: The full corporate or individual name of the fabricating manufacturer of the vehicle shall be spelled out, except that such abbreviations as "Co." or "Inc." and their foreign equivalents, and

the first and middle initials of individuals, may be used. In the case of imported vehicles the corporate or individual name of the agent designated by the fabricating manufacturer pursuant to section 110(e) of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1399(e)) shall also be indicated. If the fabricating manufacturer is a corporation that is controlled by another corporation that assumes responsibility for compliance with all requirements of this part, the name of the controlling corporation may be used.

[(2) Identifying classifications of the vehicles potentially affected by the defect, including make, line or model as appropriate, model year if appropriate, any other data necessary to describe the affected vehicles, and the inclusive dates (month and year) of manufacture. (39 F.R. 4578—February 5, 1974. Effective: 5/6/74)]

(3) Total number of vehicles potentially affected by the defect, and the number in each classification set forth under subparagraph (2) of this paragraph.

(4) Estimated percentage of the potentially affected vehicles that contains the defect.

(5) Description of defect, including both a brief summary and a detailed description, with graphic aids as necessary, of the nature and physical location of the defect.

(6) Chronology of all principal events that were the basis for the determination of the existence of a safety defect, including all warranty claims, field service bulletins and other information, with their dates of receipt.

(7) Statement of measures to be taken to repair the defect.

(8) Three copies of all notices, bulletins, and other communications that are sent to more than one dealer or purchaser and relate directly to the defect. These copies shall be submitted to the Administration not later than the time at which they are initially sent to dealers or purchasers.

### § 573.5 Quarterly reports.

(a) Each manufacturer shall submit to the Administration a quarterly report not more than

25 working days after the close of each calendar quarter.

(b) [Reserved. (39 F.R. 43045—December 10, 1974. Effective: 12/10/74)]

(c) The following information shall be included in the quarterly reports, under the numbers and headings indicated, with respect to each notification campaign for the period of time specified in paragraph (e) of this section:

(1) Notification campaign number.

(2) Date owner notification begun, and date completed.

(3) Number of vehicles involved in notification campaign.

(4) Number of vehicles known or estimated to contain the defect.

(5) Number of vehicles inspected by or at the direction of the manufacturer.

(6) Number of inspected vehicles found to contain the defect.

(7) Number of vehicles for which corrective measures have been completed.

(8) Number of vehicles determined to be unreachable for inspection due to exportation, theft, scrapping or for other reasons (specify).

[(9) The vehicle identification number for each vehicle for which corrective measures have not been completed. (39 F.R. 4578—February 5, 1974. Effective: 5/6/74)]

(d) If the manufacturer determines that the original answers for paragraph (c) (3) and (4) of this section are incorrect, revised figures and an explanatory note shall be submitted. If the nature of the defect prevents determination of the number of inspected vehicles that are defective, the manufacturer shall submit a brief explanation. Answers to paragraph (c) (5), (6), (7), and (8) of this section shall be cumulative totals.

[(e) The information specified in paragraphs (c)(1) through (c)(8) of this section shall be included in the quarterly reports, with respect to each notification campaign, for six consecutive quarters beginning with the quarter in which the campaign was initiated, or until corrective action has been completed on all defective vehicles involved in the campaign, whichever occurs first. The information specified in paragraph (c)(9)

of this section shall be included only in the third quarterly report furnished pursuant to this section. (39 F.R. 16469—May 9, 1974. Effective: 8/6/74) ]

**§ 573.6 Owner lists.**

Each manufacturer shall maintain in a form suitable for inspection, such as computer information storage devices or card files, a list of the names and addresses of first purchasers or subsequent purchasers to whom a warranty has been transferred, and of any other owners known to the manufacturer, and the vehicle identification numbers for all his vehicles involved in each safety defect notification campaign initiated after the effective date of this part. The list shall show the status of inspection and defect correction with respect to each vehicle involved in each campaign, updated as of the end of each quarterly reporting period required in paragraph (e) of § 573.5. The completed list shall be retained for 5 years after the date on which the defect information report is initially submitted to the Administration.

**§ 573.7 Notices, bulletins and other communications.**

Each manufacturer shall furnish the Administration a copy of all notices, bulletins, and other communications, other than those required to be submitted under § 573.4(c)(8), sent to more than one dealer or purchaser of his vehicles regarding any defect, whether or not safety-related, in such vehicles. These copies shall be submitted monthly not more than 5 working days after the close of each month.

**§ 573.8 Address for submitting all required reports and other information.**

All required reports and other information shall be submitted to: Office of Compliance, National Highway Traffic Safety Administration, Washington, D.C. 20590.

**36 F.R. 3064**

**February 17, 1971**



## PREAMBLE TO PART 574—TIRE IDENTIFICATION AND RECORDKEEPING

(Docket No. 70-12; Notice No. 5)

On November 10, 1970, the National Highway Safety Bureau (now the National Highway Traffic Safety Administration, or NHTSA) published the Tire Identification and Recordkeeping Regulations (35 F.R. 18116). Thereafter, pursuant to § 553.35 of the rulemaking procedures (49 CFR Part 553, 35 F.R. 5119), petitions for reconsideration or petitions for rulemaking were filed by the American Retreaders' Association, Inc., the Armstrong Rubber Co., Bandag Inc., the National Tire Dealers & Retreaders Association, Inc., the Goodyear Tire & Rubber Co., the Lee Tire and Rubber Co., Chrysler Corp., the Rubber Manufacturers Association, Ford Motor Co., the Kelly-Springfield Tire Co., Pirelli Tire Corp., the B. F. Goodrich Co., Uniroyal Tire Co., Cooper Tire & Rubber Co., Michelin Tire Corp., the Firestone Tire & Rubber Co., White Motor Corp., Bert Schwarz-S&H Inc., and the Truck Trailer Manufacturers Association. Several petitioners requested the opportunity to demonstrate difficulties they were having meeting the regulation as issued, and as a result a public meeting was held December 21, 1970. Notice of the meeting was published in the *Federal Register* (35 F.R. 19036) and the transcript of the meeting is in the public docket. The substance of the petitions and comments made at the meeting have been considered. Certain parts of the Tire Identification and Recordkeeping Regulation are hereby amended.

The definition of "Tire brand name owner" in § 574.3(c) is changed to make it clear that a person manufacturing a brand name tire that he markets himself is not a brand name owner for the purposes of this regulation.

The regulation is amended to except from its requirements tires manufactured for pre-1948 vehicles. This exception is consistent with the

Federal Motor Vehicle Safety Standard for passenger car tires (Standard No. 109).

After consideration of the comments in the petitions concerning the tire identification number requirements, several changes have been made.

1. Section 574.5 is amended to specify the numbers and letters to be used in the identification number.

2. Figures 1 and 2 are modified to allow three-quarters of an inch, instead of one-half inch, between the DOT symbol and the identification number and between the second and third grouping. Tires with cross section width of 6 inches or less may use  $\frac{5}{32}$ -inch letters. The DOT symbol may be located to the right of the identification number as well as above, below, or to the left of the identification number. Retreaders, as well as new tire manufacturers, may locate the DOT symbol above, below, to the left, or to the right of the identification number. The minimum depth of the identification number has been changed from 0.025 inch to 0.020 inch, measured from the surface immediately surrounding the characters.

3. The second grouping, identifying the tire size, has been changed with respect to retreaded tires to provide that if a matrix is used for processing the retreaded tire the code must identify the matrix used. The change requiring retreaded tire identification numbers to contain a matrix code rather than a size code was made because, in the event of a defect notification, the matrix would be a more meaningful method of identifying the suspect tires and it was considered impracticable to require retreaders to include the tire size in the tire-identification number.

4. The third grouping, for identifying the significant characteristics of the tire, has been changed to provide that if a tire is manufactured

for a brand name owner the code shall include symbols identifying the brand name owner, which shall be assigned by the manufacturer rather than by the NHTSA. Manufacturers are required to provide the NHTSA with the symbols assigned to brand name owners upon the NHTSA's request. This change should result in a shorter identification number and allow manufacturers greater flexibility in the use of the third grouping.

Standard No. 109 presently requires that passenger car tires contain a DOT symbol, or a statement that the tire complies with the standard, on both sidewalls of the tire between the section width and the bead. The requirement in Standard No. 109 is being changed by notice published in this issue (36 F.R. 1195 to provide that the DOT symbol may be on either sidewall, in the location specified by this regulation. The requested change that the DOT symbol be allowed on tires for which there is no applicable standard in effect is denied, since such use would tend to give consumers the impression those tires were covered by a Federal standard.

Several petitioners requested that other DOT symbols (located as required by the present Standard No. 109) be permitted to remain on the tire along with the three-digit manufacturer's code number assigned pursuant to that standard. The Tire Identification and Record-keeping regulation does not prohibit the continued use of the symbol and code number provided the numbers are not close enough to the identification number to be confused with it. In no event should the three-digit number, formerly required by Standard No. 109, immediately follow the tire identification number.

As a result of petitions by vehicle manufacturers the requirement in § 574.10 that vehicle manufacturers maintain the record of tires on each vehicle shipped has been changed to eliminate the requirement that this information be maintained by identification number. It would evidently be extremely difficult and expensive for the vehicle manufacturer to record each tire identification number. Vehicle manufacturers have stated that their present system provides records that enable them to notify the purchaser of a vehicle that may contain suspect tires.

Several petitioners requested that the effective date of the regulation be extended beyond May 1, 1971. The 1970 amendment to the National Traffic and Motor Vehicle Safety Act requires that the provisions relating to maintaining records of tire purchasers shall be effective not later than 1 year after the date of enactment of these amendments (May 22, 1971). It has been determined that in view of the complexities involved in establishing the recordkeeping system required and the effect of the same on existing processes, good cause exists for making the regulations effective on the latest date manufacturers are required by statute to maintain records. It is further determined that a May 22, 1971, effective date is in the public interest.

Effective date: May 22, 1971.

Issued on January 19, 1971.

Douglas W. Toms,  
Acting Administrator, National  
Highway Traffic Safety Administration.

36 F.R. 1196  
January 26, 1971

**PREAMBLE TO AMENDMENT TO PART 574—TIRE IDENTIFICATION AND  
RECORDKEEPING**

**(Docket No. 70-12; Notice No. 9)**

**Amendment to Figure 2 Concerning the Location of the Tire Identification Number  
for Retreaded Tires**

The purpose of this amendment is to provide retreaders with an alternative location for the placement of the tire identification number.

On January 26, 1971, the National Highway Traffic Safety Administration published Docket No. 70-12, Notice No. 5, a revised version of the Tire Identification and Record Keeping Regulation, 49 CFR Part 574 (36 F.R. 1196). Section 574.5 requires retreaders to permanently mold or brand into or onto one sidewall a tire identification number in the manner specified in Figure 2 of the regulation. Figure 2 requires that the tire identification number be located in the area of the shoulder between the tread edge and the maximum section width of the tire. The regulation specified this location because, generally, it is the area upon which retreaders apply new retread material.

Bandag, Inc., has petitioned for rulemaking to allow the tire identification to be below the section width of the tire. The petition requests this relief because the Bandag process only affects the tread surface, a comparatively smooth surface is needed for application of the identification number, and many casings have no smooth area

between the tread edge and the maximum section width.

Therefore, in view of the above, Figure 2 of Part 574 (36 F.R. 1200) is hereby amended as set forth below to require that the tire identification number be on one sidewall of the tire, either on the upper segment between the maximum section width and the tread edge, or on the lower segment between the maximum section width and bead in a location such that the number will not be covered by the rim flange when the tire is inflated. In no event should the number be on the surface of the scuff rib or ribs.

*Effective date:* May 22, 1971.

Because this amendment relieves a restriction and does not impose any additional burden on any person it is found that notice and public procedure thereon are unnecessary and impracticable, and that, for good cause shown, an effective date less than 30 days after the date of issuance is in the public interest.

Issued on May 21, 1971.

Douglas W. Toms  
Acting Administrator



## PREAMBLE TO AMENDMENT TO PART 574—TIRE IDENTIFICATION AND RECORD KEEPING

(Docket No. 70-14; Notice 15)

The purpose of this amendment to Part 574 of Title 49, Code of Federal Regulations, is to provide that the second group of symbols within the tire identification number shall, in the case of new tires, be assigned at the option of the manufacturer rather than conforming to the tire size code presently found in Table I of the regulation.

Under the present system, even if the presently unassigned symbols "O" and "R" are used, a maximum of 900 tire size codes can be assigned. Due to the many new tire sizes being introduced, it is necessary to change the system to allow more flexibility. Therefore, Table I is herewith deleted, new tire manufacturers are allowed to assign their own two-digit code for the tire size, and retreaders are allowed to use either a self-assigned matrix code or a self-assigned tire size code. Each new tire manufacturer will still be required to use a two-symbol size code and to maintain a record of the coding system used, which shall be provided to the National Highway Traffic Safety Administration upon written request. It is recommended but not required that manufacturers use the code sizes previously assigned by this agency for active sizes, and reuse the codes for obsolete sizes when additional size codes are needed.

A notice of proposed rulemaking on this subject was published on June 16, 1972 (37 F.R. 11979). The comments received in response to the notice have been considered in the issuance of this final rule. The rule is issued as it appeared in the proposal including the letter "T" inadvertently omitted from the proposal.

Three of the tire manufacturers who commented favored the proposed change, and the National Tire Dealers and Retreaders Association, the Japan Automobile Manufacturers Association and The European Tyre and Rim

Technical Organisation commented without objection to the proposed change.

Bandag, Inc., a retreader of tires, objected to the proposed change on the grounds that allowing tire manufacturers to assign their own tire size code would remove one of the methods a retreader has to determine the tire size of a casing to be retreaded.

Mercedes-Benz of North America and Volkswagen of America did not favor the change because of the possibility of confusion for the vehicle manufacturer that equips its vehicle with several manufacturers' tires.

The principal objection raised by Bandag should be considerably alleviated by an amendment to Standard No. 109 (36 F.R. 24824) under consideration, which would require tire manufacturers to place the actual tire size, as well as other pertinent information, between the section width and the bead of the tire so that the information will be less susceptible to obliteration during use or removal during the retreading process.

With respect to the comment by Mercedes-Benz of North America and Volkswagen of America, it was concluded that because the existing system does not provide enough symbols to meet the anticipated introduction of new tire sizes, the proposed change is necessary. Mercedes' recommendation that "G", "Q", "S", and "Z" be added or that a three-digit size code be used was rejected, because the additional symbols suggested are difficult to apply to the tire, and the addition of a third symbol would, according to the tire manufacturers, be impractical and inefficient.

A list of the tire size codes assigned up to this time is published in the general notice section of this issue of the *Federal Register* (37 F.R. 23742). The NHTSA urges tire manufacturers to use

these existing codes for tire sizes presently being produced and to work within their tire and rim associations to make code assignments for new tire sizes on an industry-wide basis and reuse obsolete size codes wherever possible. In this way the usefulness of the tire size code to the vehicle manufacturer will be maintained.

In consideration of the foregoing, in Part 574 of Title 49, Code of Federal Regulations, Table I is deleted and § 574.5 is amended . . . .

*Effective date:* November 8, 1972.

Because this amendment relieves a restriction, and because of the immediate need for the introduction of new tire size codes, it is found for

good cause shown that an effective date less than 30 days from the date of issuance is in the public interest.

Issued under the authority of sections 103, 112, 113, 119 and 201 of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1392, 1401, 1402, 1407 and 1421, and the delegation of authority at 49 CFR 1.51.

Issued on October 31, 1972.

Charles H. Hartman  
Acting Administrator

**37 F.R. 23727**  
**November 8, 1972**

## PREAMBLE TO AMENDMENT TO PART 574—TIRE IDENTIFICATION AND RECORDKEEPING

(Docket No. 71-18; Notice 7)

This notice amends Standard No. 119, *New pneumatic tires for vehicles other than passenger cars*, 49 CFR 571.119, to specify lettering sizes and modified treadwear indicator requirements for tires. In addition, it amends Part 574, *Tire Identification*, 49 CFR 574, to permit the labeling of certain tires with the symbol DOT prior to the effective date of the standard. This notice also responds to petitions for reconsideration of Standard 119's effective date by maintaining the present date of March 1, 1975.

To avoid a costly production shutdown on the effective date to engrave tire molds with the DOT compliance symbol required by the standard, the National Highway Traffic Safety Administration (NHTSA) proposed a modification of the Part 574 prohibition on the symbol's use prior to the effective date (39 F.R. 3967, January 31, 1974). The Rubber Manufacturers Association and five tire manufacturers agreed that the DOT should be engraved on tire molds prior to the effective date, but objected to the expense of covering the DOT with a label stating that "no Federal motor vehicle safety standard applies to this tire," when the DOT appears on tires which (presumably) satisfy Standard 119 requirements. Firestone pointed out that the large label size could obscure other label information. Goodrich noted that, as proposed, the DOT could be molded on tires which met no standard and could mislead a user if the label fell off.

The NHTSA will not permit the appearance of the DOT compliance symbol on any item of motor vehicle equipment to which no standard is applicable. The terms "applicability" and "applies" have only one meaning for Federal motor vehicle safety standards: that the vehicle or equipment concerned is subject to a safety standard. To permit use of the DOT symbol on

vehicles or items of motor vehicle equipment to which no standard applies would confuse the meaning of the symbol and the concept of compliance.

In response to Firestone and Goodrich, the NHTSA has modified the lettering size on the label and limited use of the DOT symbol to tires for which a standard has been issued. With the small lettering size, the rubber labels used on retread tires can be applied over the DOT symbol in fulfillment of the requirement. Another method which manufacturers did not mention but which would be permissible is the removal of the DOT at the same time imperfections are buffed off the tire.

All comments on the proposal objected to the specific location requirements for treadwear indicators based on the concept of even tread wear across the tread width. Goodyear demonstrated in a meeting with the NHTSA Tire Division on February 13, 1974, and detailed in its submission to the Docket, the difficulty in equating ideal tire wear with actual road experience. They recommended the simpler concept that a tire has worn out when any major tread groove has only  $\frac{2}{32}$  in tread remaining. The NHTSA has concluded that treadwear indicators must be placed at the discretion of the manufacturer to give a person inspecting the tire visual indication of whether the tire has worn to a certain tread depth. Accordingly, the lateral location requirements for treadwear indicators have been deleted from the standard.

There was no discussion of the lettering size and depth proposal, and these proposals are adopted as proposed.

The comments requested reconsideration of the standard's March 1, 1975, effective date (published February 1, 1974, 39 F.R. 4087), asserting the need for 18 months of lead time following

Effective: April 3, 1974

publication of this notice to engrave tire molds as required by the standard. The NHTSA has found that 11 months is sufficient leadtime to accomplish these changes, and accordingly these petitions are denied.

To correct an inadvertent omission in the amendment of Standard No. 119 in response to petitions for reconsideration (39 F.R. 5190, February 11, 1974), superscripts are added to Table III entries for "All other, A, B, C, D range tires".

In consideration of the foregoing, Parts 571 and 574 of Title 49, Code of Federal Regulations, are amended. . . .

*Effective date:* Standard No. 119 amendments: March 1, 1975. Part 574 amendment: April 3,

1974. Because the Part 574 amendment creates no additional burden, and because modification of tire molds must begin immediately, it is found for good cause shown that an effective date less than 180 days after issuance is in the public interest.

(Secs. 103, 112, 119, 201, Pub. L. 89-563, 80 Stat. 718; 15 U.S.C. 1392, 1401, 1407, 1421; delegation of authority at 49 CFR 1.51.)

Issued on March 28, 1974.

James B. Gregory  
Administrator

**39 F.R. 12104**  
**April 3, 1974**

**PREAMBLE TO AMENDMENT TO PART 574—  
TIRE IDENTIFICATION AND RECORDKEEPING**

(Docket No. 70-12; Notice 19)

This notice amends the Tire Identification and Recordkeeping regulation, 49 CFR Part 574, to establish an optional universal registration format for tire registration forms. It also requires manufacturers of new tires to redirect registration forms of other manufacturers of new tires which have been forwarded to them in error.

On March 9, 1973, the NHTSA issued a notice of proposed rulemaking (38 F.R. 6398) proposing a universal registration form for tire identification and record keeping. The notice was issued in response to requests from multi-brand tire dealers who were faced with a multiplicity of different forms and procedures for tire registration. Currently, the regulation merely requires manufacturers and retreaders to supply a "means" of registration. The proposed rule also envisioned that a copy of the form would be provided to the first purchaser and that manufacturers and retreaders would be required to redirect registration forms which had been forwarded to them in error.

All comments received in response to the notice were sympathetic to the problems faced by the multi-brand dealers, and the majority were willing to provide a "universal form" if requested by a dealer.

Most manufacturers, however, pointed out that their exclusive dealerships had received training in the use of the current form, as had their own personnel, and that a total change-over would work a hardship without a concomitant benefit for single-brand dealers. In view of these comments, NHTSA has decided to promulgate the universal registration format, which appears as Fig. 3, as an optional format to be followed if requested by a dealer and as a guide if a dealer prefers to supply his own forms.

The proposal to require tire manufacturers and retreaders to forward all misdirected registration forms within 30 days was universally opposed by new-tire manufacturers, who stated that they are currently participating in a voluntary but limited program for forwarding these misdirected forms. Furthermore, new-tire manufacturers believe they should not be responsible for misdirected retreaded tire registration forms, as there are over 5,000 tire retreaders in the country and such a task would be formidable. One new-tire manufacturer indicated that he had received over 15,000 misdirected retreaded tire registration forms during January 1973. The docket contained only one submission from the retreading industry, and it did not deal with the problem of misdirected forms.

It also appears from the comments received and other information available to NHTSA that new-tire manufacturers maintain a computer-based registration process, while only approximately 25% of the retreading industry utilizes computers for this purpose. Thus, the requirement for forwarding all misdirected forms would fall heavily on both segments of the industry, new-tire manufacturers in that most misdirected forms appear to be sent to them and retreaders in that a majority are ill-equipped to carry out the forwarding functions.

Therefore, rather than issue an all-inclusive forwarding requirement at this time, NHTSA has decided to require only that new-tire manufacturers redirect new tire registration forms erroneously forwarded to them. Further, the NHTSA has determined that a 90-day forwarding period will be sufficient, rather than the 30 days originally proposed. It is expected that the use of the manufacturer's logo on the universal registration format and increased vigilance

on the part of the industry will substantially curtail the number of misdirected forms. If it later appears that tire registrations are not being properly received, the NHTSA intends to take further action in this area.

The notice proposed that tire manufacturers furnish their dealers with duplicate copies of the registration form so that a copy could be given to consumers at the time of purchase. This provision was objected to by all new-tire manufacturers and the retreaders' association. In their view, the increased expense served no viable function as Part 574 currently requires all purchasers to be notified by certified mail of safety defects. They argued that the possession of a duplicate registration form would not aid the purchaser in the case of recall. The manufacturers also said that the completion of registration forms is often reserved until the end of the day or other slack time, and further that the

consumer automatically receives a copy of his tire identification number on the guarantee if one is given.

The NHTSA finds these arguments to have merit, and the requirement to give the purchaser a copy of the registration form is deleted from the final rule.

In consideration of the foregoing, 49 CFR 574.7 is amended...

*Effective date:* September 3, 1974.

(Secs. 103, 112, 113, 119, 201, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1407, 1421; delegation of authority at 49 CFR 1.51.)

Issued on May 28, 1974.

James B. Gregory  
Administrator

**39 F.R. 19482**  
**June 3, 1974**

**PREAMBLE TO AMENDMENT TO PART 574—TIRE IDENTIFICATION AND RECORDKEEPING****(Docket No. 70-12; Notice 21)**

This notice amends 49 CFR Part 574 to provide that the Universal Registration Forms supplied by dealers must conform in size and be similar in format to Figure 3 of the regulation.

On June 2, 1974, 49 CFR Part 574 was amended to require a Universal Registration Format when tire registration forms are supplied by manufacturers to dealers (39 F.R. 19482). Three petitions for reconsideration were received in response to this notice. All three, Michelin Tire Corporation, Rubber Manufacturers Association, and the Firestone Tire and Rubber Company, requested that the regulation be amended to require that dealer-supplied registration forms also conform in size and be similar in format to Figure 3 of the regulation. The petitioners pointed out that registration handling methodology has been standardized throughout the industry, and that the use of different sizes and formats would be costly and inefficient. The NHTSA concurs in this assessment, and therefore amends 49 CFR 574.7(a) to require that the dealer-supplied forms must conform in size and be similar in format to Figure 3.

In addition, Firestone petitioned to revise Figure 3 slightly and to extend the effective date of the amendment to 120 days after the response to the petitions for reconsideration. Since 49 CFR 574.7 currently requires only that the forms be "similar" to Figure 3, Firestone's proposed modification is authorized by the regulation and no amendment to the standard is needed. Firestone's request to extend the effective date of the standard is denied, as NHTSA has determined sufficient lead time was available from the date the amendment was issued to prepare forms.

In consideration of the foregoing, the last sentence of 49 CFR 574.7(a) is amended. . . .

*Effective date:* November 1, 1974.

(Secs. 103, 112, 113, 119, 201, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1402, 1407, 1421; delegation of authority at 49 CFR 1.51.)

Issued on October 29, 1974.

James B. Gregory  
Administrator

**39 F.R. 38658**  
**November 1, 1974**



## PART 574—TIRE IDENTIFICATION AND RECORDKEEPING

(Docket No. 70-12; Notice No. 5)

Sec.

- 574.1 Scope.  
 574.2 Purpose.  
 574.3 Definitions.  
 574.4 Applicability.  
 574.5 Tire identification requirements.  
 574.6 Identification mark.  
 574.7 Information requirements—tire manufacturers, brand name owners, retreaders.  
 574.8 Information requirements—tire distributors and dealers.  
 574.9 Requirements for motor vehicle dealers.  
 574.10 Requirements for motor vehicle manufacturers.

**AUTHORITY:** The provisions of this Part 574 issued under secs. 103, 112, 113, 119, 201, and 206, National Traffic and Motor Vehicle Safety Act of 1966, as amended, 15 U.S.C. 1392, 1401, 1402, 1407, 1421, and 1426; delegation of authority at 49 CFR 1.51, 35 F.R. 4955.

**§ 574.1 Scope.**

This part sets forth the method by which manufacturers, brand name owners, and retreaders shall identify tires for use on motor vehicles and maintain records of tire purchasers, and the method by which distributors and dealers of new and retreaded tires shall record and report the names of tire purchasers to manufacturers, brand name owners and retreaders.

**§ 574.2 Purpose.**

The purpose of this part is to facilitate notification to purchasers of defective or nonconforming tires, pursuant to section 113 of the National Traffic and Motor Vehicle Safety Act of 1966, as amended (15 U.S.C. 1402) (hereafter the Act), so that they may take appropriate action in the interest of motor vehicle safety.

**§ 574.3 Definitions.**

(a) *Statutory definitions.* All terms in this

part that are defined in section 102 of the Act are used as defined therein.

(b) *Motor vehicle safety standard definitions.* Unless otherwise indicated, all terms used in this part that are defined in the Motor Vehicle Safety Standards, part 571 of this subchapter (hereinafter the Standards), are used as defined therein.

(c) *Definitions used in this part.* (1) "Mileage contract purchaser" means a person who purchases or leases tire use on a mileage basis.

(2) "Tire brand name owner" means a person, other than a tire manufacturer, who owns or has the right to control the brand name of a tire or a person who licenses another to purchase tires from a tire manufacturer bearing the licensor's brand name.

(3) "Tire purchaser" means a person who buys or leases a new or newly retreaded tire, or who buys or leases for 60 days or more a motor vehicle containing a new tire or a newly retreaded tire, for purposes other than resale.

**§ 574.4 Applicability.**

This part applies to manufacturers, brand name owners, retreaders, distributors, and dealers of new and retreaded tires for use on motor vehicles manufactured after 1948 and to manufacturers and dealers of motor vehicles manufactured after 1948. [However, it does not apply to persons who retread tires solely for their own use. (36 F.R. 5422—March 23, 1971. Effective: 5/22/71)]

**§ 574.5 Tire identification requirements.**

[Each tire manufacturer shall conspicuously label on one sidewall of each tire he manufactures, except tires manufactured exclusively for mileage contract purchasers, by permanently molding into or onto the sidewall, in the manner and location specified in Figure 1, a tire identification number containing the information set forth in paragraphs (a) through (d) of this

section. Each tire retreader, except tire readers who retread tires for their own use, shall conspicuously label one sidewall of each tire he retreads by permanently molding or branding into or onto the sidewall, in the manner and location specified in Figure 2, a tire identification number containing the information set forth in paragraphs (a) through (d) of this section. In addition, the DOT symbol required by Federal Motor Vehicle Safety Standards shall be located as shown in Figures 1 and 2. The DOT symbol shall not appear on tires to which no Federal Motor Vehicle Safety Standard is applicable, unless, in the case of tires for which a standard has been issued but which is not yet effective, the symbol is covered by a label that is not easily removable and that states in letters at least 0.078 inches high:

NO FEDERAL MOTOR  
VEHICLE SAFETY  
STANDARD APPLIES  
TO THIS TIRE

The symbols to be used in the tire identification number for tire manufacturers and readers are "A, B, C, D, E, F, H, J, K, L, M, N, P, R, T, U, V, W, X, Y, 1, 2, 3, 4, 5, 6, 7, 8, 9, 0." Tires manufactured or retreaded exclusively for mileage contract purchasers are not required to contain the tire identification number if the tire contains the phrase "for mileage contract use only" permanently molded into or onto the tire sidewall in lettering at least one-quarter inch high. (39 F.R. 12104—April 3, 1974. Effective: 4/3/74)]

(a) First grouping. The first group, of two or three symbols, depending on whether the tire is new or retreaded, shall represent the manufacturer's assigned identification mark (see § 574.6).

(b) Second grouping. For new tires, the second group, of no more than two symbols, shall be used to identify the tire size. For retreaded tires, the second group, of no more than two symbols, shall identify the retread matrix in which the tire was processed or a tire size code if a matrix was not used to process the retreaded tire. Each new tire manufacturer and retreader shall maintain a record of each symbol used, with the corresponding matrix or tire size and shall provide such record to the NHTSA upon written request.

(c) Third grouping. The third group, consisting of no more than four symbols, may be used at the option of the manufacturer or retreader as a descriptive code for the purpose of identifying significant characteristics of the tire. However, if the tire is manufactured for a brand name owner, one of the functions of the third grouping shall be to identify the brand name owner. Each manufacturer or retreader who uses the third grouping shall maintain a detailed record of any descriptive or brand name owner code used, which shall be provided to the Bureau upon written request.

(d) Fourth grouping. The fourth group, of three symbols, shall identify the week and year of manufacture. The first two symbols shall identify the week of the year using "01" for the first full calendar week in each year. The final week of each year may include not more than 6 days of the following year. The third symbol shall identify the year. (Example: 311 means the 31st week of 1971, or Aug. 1 through 7, 1971; 012 means the first week of 1972, or Jan. 2 through 8, 1972.) The symbols signifying the date of manufacture shall immediately follow the optional descriptive code (paragraph (c) of this section). If no optional descriptive code is used the symbols signifying the date of manufacture shall be placed in the area shown in figures 1 and 2 for the optional descriptive code.

#### § 574.6 Identification mark.

To obtain the identification mark required by § 574.5(a), each manufacturer of new or retreaded motor vehicle tires shall apply after November 30, 1970, in writing, to "Tire Identification and Recordkeeping," National Highway Traffic Safety Administration, 400 Seventh Street SW., Washington, D.C. 20590, identify himself as a manufacturer of new tires or retreaded tires, and furnish the following information:

(a) The name, or other designation identifying the applicant, and his main office address.

(b) The name, or other identifying designation, of each individual plant operated by the manufacturer and the address of each plant, if applicable.

(c) The type of tires manufactured at each plant, e.g., passenger car tires, bus tires, truck tires, motorcycle tires, or retreaded tires.

**§ 574.7 Information requirements—tire manufacturers, brand name owners, retreaders.**

[(a) Each tire manufacturer, brand name owner and retreader (hereinafter referred to in this section and § 574.8 as "tire manufacturer" unless specified otherwise), or his designee, shall provide forms to every distributor and dealer of his tires who offers these tires for sale or lease to tire purchasers, by which the distributor or dealer may record the information appearing in paragraphs (a)(1), (a)(2) and (a)(3) of this section. Forms conforming in size and similar in format to Figure 3 shall be provided to those dealers who request them, or if a dealer prefers, he may supply his own form as long as it contains the required information, conforms in size, and is similar in format to Figure 3.

- (1) Name and address of the tire purchaser;
- (2) Tire identification number;

(3) Name and address of the tire seller or other means by which the manufacturer can identify the tire seller.

(39 C.F. 38658—November 1, 1974. Effective: 11/1/74)]

[(b) Each tire manufacturer shall record and maintain or have recorded and maintained for him, the information specified in paragraph (a) of this section and shall not use this information for any commercial purpose detrimental to tire distributors or dealers. Any new-tire manufacturer to whom forms are mistakenly returned shall forward the new-tire registration forms to the proper new-tire manufacturer within 90 days from receipt of the form.

(c) Each tire manufacturer shall maintain, or have maintained for him, a record of each tire distributor or dealer who purchases tires directly from him and sells them to tire purchasers, the number of tires purchased by each such dis-

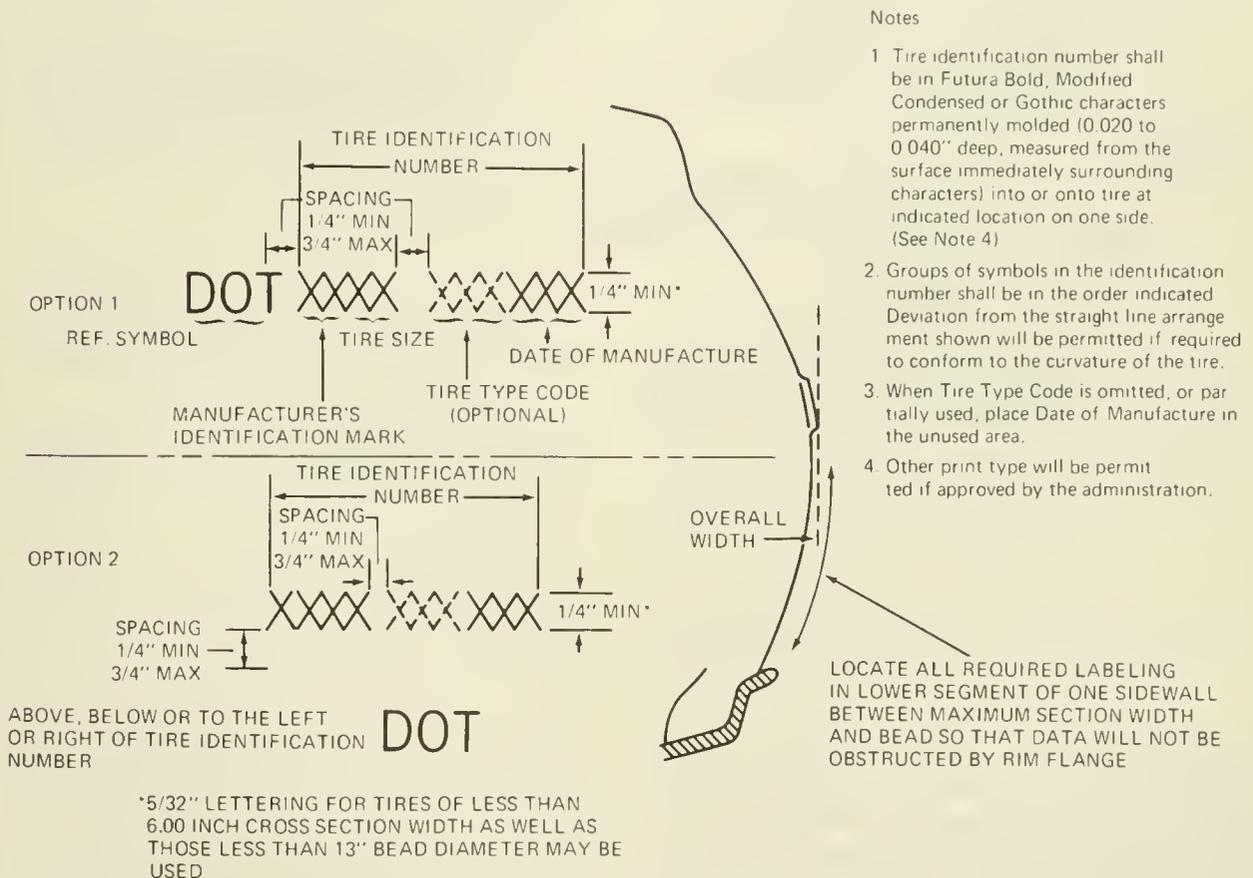
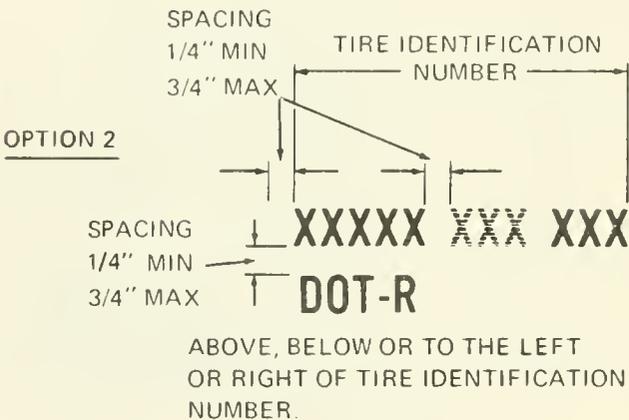
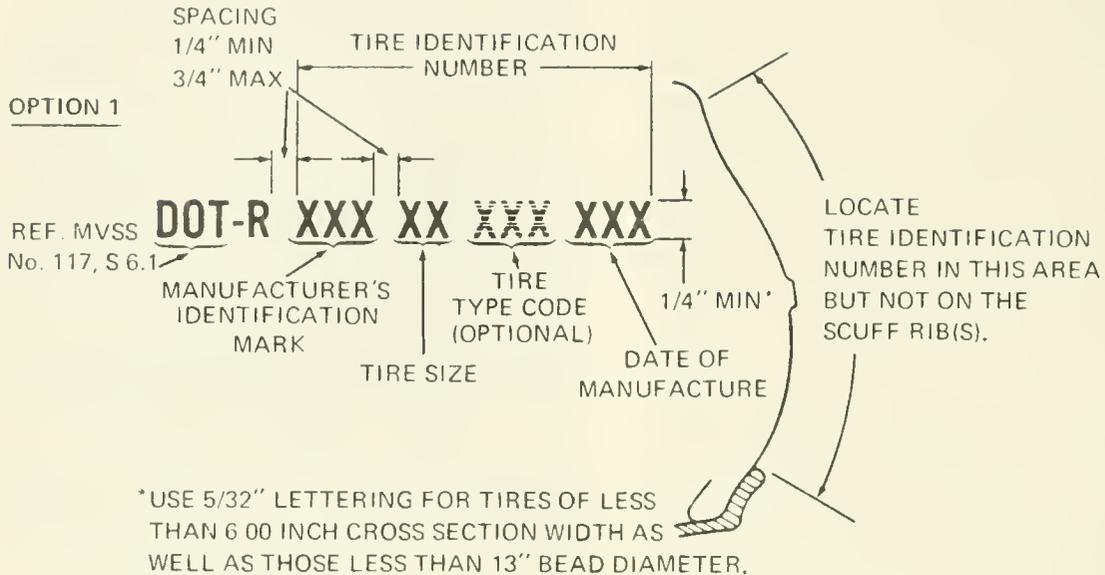


FIGURE 1 IDENTIFICATION NUMBER FOR NEW TIRES



**NOTES:**

1. Tire identification number shall be in "Futura Bold, Modified, Condensed or Gothic" characters permanently molded (0.020 to 0.040" deep, measured from the surface immediately surrounding characters) into or onto tire at indicated location on one side. (See Note 4)
2. Groups of symbols in the identification number shall be in the order indicated. Deviation from the straight line arrangement shown will be permitted if required to conform to the curvature of the tire.
3. When Tire Type Code is omitted, or partially used, place Date of Manufacture in the unused area.
4. Other print type will be permitted if approved by the Administration.

FIGURE 2 IDENTIFICATION NUMBER FOR RETREADED TIRES

tributor or dealer, the number of tires for which reports have been received from each such distributor or dealer pursuant to paragraph (a) of § 574.8, the total number of tires sold by the tire manufacturer, and the total number of tires for which reports have been received.

(d) Information required by paragraph (a) of this section shall be maintained for a period of not less than 3 years from the date the tire manufacturer or his designee records the information submitted to him. (39 F.R. 19482—June 3, 1974. Effective: 9/3/74) ]

7 3/8" ± 1/8"

IMPORTANT FEDERAL LAW REQUIRES  
TIRE IDENTIFICATION NUMBERS MUST  
BE REGISTERED  
(PLEASE PRINT)

(A) (B)

RETURN TO \_\_\_\_\_

CUSTOMER'S NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

DATE \_\_\_\_\_ FLEET VEHICLE No (OPTIONAL) \_\_\_\_\_

SELLERS NAME AND/OR MANUFACTURER SELLER NUMBER \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP \_\_\_\_\_

NEW  RETREAD

QTY	TIRE IDENTIFICATION NUMBERS											
	1	2	3	4	5	6	7	8	9	10	11	12

(A) PREPRINTED TIRE MANUFACTURERS' LOGO OR OTHER IDENTIFICATION AND MAILING ADDRESS

(B) MICROFILM NUMBER LOCATION IF NECESSARY

A-B AREAS TO SUIT TIRE MANUFACTURERS REQUIREMENTS

FIG 3 - UNIVERSAL FORMAT

**§ 574.8 Information requirements—tire distributors and dealers.**

(a) Each distributor and each dealer selling tires to tire purchasers shall submit the information specified in § 574.7 (a) to the manufacturer of the tires sold, or to the manufacturer's designee.

(b) Each tire distributor and each dealer selling tires to tire purchasers shall forward the information specified in § 574.7(a) to the tire manufacturer, or person maintaining the information, not less often than every 30 days. However, a distributor or dealer who sells less than 40 tires, of all makes, types, and sizes during a 30-day period may wait until he sells a total of 40 tires, but in no event longer than 6 months, before forwarding the tire information to the respective tire manufacturers or their designees.

(c) Each distributor and each dealer selling tires to other tire distributors and dealers shall supply to the tire distributor or dealer to whom he sells tires a means to record the information specified in § 574.7(a), unless such a means has been provided to that distributor or dealer by another person or by a manufacturer.

(d) Each distributor and each dealer shall immediately stop selling any group of tires when so directed by a notification issued pursuant to section 113 of the Act (15 U.S.C. 1402).

**§ 574.9 Requirements for motor vehicle dealers.**

(a) Each motor vehicle dealer who sells a used motor vehicle for purposes other than resale, or who leases a motor vehicle for more than 60 days, that is equipped with new tires or newly retreaded tires is considered, for purposes of this

part, to be a tire dealer and shall meet the requirements specified in § 574.8.

(b) Each person selling a new motor vehicle to first purchasers for purposes other than resale, that is equipped with tires that were not on the motor vehicle when shipped by the vehicle manufacturer is considered a tire dealer for purposes of this part and shall meet the requirements specified in § 574.8.

**§ 574.10 Requirements for motor vehicle manufacturers.**

Each motor vehicle manufacturer, or his designee, shall maintain a record of tires on or in each vehicle shipped by him to a motor vehicle distributor or dealer, and shall maintain a record of the name and address of the first purchaser for purposes other than resale of each vehicle equipped with such tires. These records shall be maintained for a period of not less than 3 years from the date of sale of the vehicle to the first purchaser for purposes other than resale.

**[INTERPRETATION**

Under section 113(f) of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1402(f)) and Part 574, it is the tire manufacturer who has the ultimate responsibility for

maintaining the records of first purchasers. Therefore, it is the tire manufacturer or his designee who must maintain these records. The term "designee", as used in the regulation, was not intended to preclude multiple designees; if the tire manufacturer desires, he may designate more than one person to maintain the required information. Furthermore, neither the Act nor the regulation prohibits the distributor or dealer from being the manufacturer's designee nor do they prohibit a distributor or dealer from selecting someone to be the manufacturer's designee provided the manufacturer approves of the selection.

With respect to the possibility of manufacturers using the maintained information to the detriment of a distributor or dealer, the NHTSA will of course investigate claims by distributors or dealers of alleged misconduct and, if the maintained information is being misused, take appropriate action. (36 F.R. 9780—May 28, 1971) ]

**36 F.R. 4783  
March 12, 1971**

**36 F.R. 13757  
July 24, 1971**

**36 F.R. 16510  
August 21, 1971**

## PREAMBLE TO TIRE CODE MARKS ASSIGNED TO NEW TIRE MANUFACTURERS

The purpose of this notice is to publish the code numbers assigned to new-tire manufacturers under the Tire Identification and Recordkeeping Regulation, 49 CFR Part 574 (36 F.R. 1196).

The Tire Identification and Recordkeeping Regulation (hereafter Part 574) requires that new tires manufactured after May 22, 1971, be marked with a two-symbol manufacturer's code, and that retreaded tires be marked with a three-symbol manufacturer's code. The manufacturer's code is the first grouping within the tire identification number (after the symbol "DOT" or "R" where required).

Under Part 574 a separate code number is assigned to each manufacturer's plant. Table 1 of the notice lists the code numbers assigned and the manufacturer that received each code number. Table 2 lists the same information by

manufacturer. Codes assigned to retreaders will be available for inspection in the Docket Section, Room 5217, 400 Seventh Street SW., Washington, D.C. 20590.

The codes assigned to new-tire manufacturers replace the three-digit code numbers required on new brand-name passenger car tires manufactured prior to May 22, 1971, under Standard No. 109. (The list of numbers assigned under Standard No. 109 was published in the *Federal Register* of July 2, 1968, 34 F.R. 11158.)

Issued on April 14, 1971.

Rodolfo A. Diaz,  
Acting Associate Administrator,  
Motor Vehicle Programs.

**36 F.R. 7539**  
**April 21, 1971**

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PART 574; (TIRE CODE)—PRE 1-2



## PREAMBLE TO TIRE SIZE CODES

The purpose of this notice is to publish an updated list of tire size codes assigned by the National Highway Traffic Safety Administration in accordance with the Tire Identification and Record Keeping regulation, 49 CFR Part 574 (36 F.R. 1196).

The Tire Identification and Record Keeping regulation requires that a tire identification number be placed on new and retreaded tires, and that the second grouping of the number be a code that identifies the tire size or, in the case of a retreaded tire, the tire matrix. New tire manufacturers have up to now been required to use a specific tire size code assigned to the tire size by the NHTSA. Because of the number of new tire sizes being introduced into the market, the possible combinations of letters and numbers have been virtually exhausted.

In order to accommodate new tire sizes, the regulation is being amended by notice published elsewhere in this issue (37 F.R. 23727), to allow each tire manufacturer to assign a two-symbol

size code of his own choice, rather than having the number assigned by the agency. However, it is urged that manufacturers maintain the assigned tire size code for existing tire sizes, and that they reuse obsolete tire size codes for new sizes wherever possible.

For convenience of reference, an updated list of the tire size codes assigned by the NHTSA is published below for the information and guidance of tire manufacturers.

This notice is issued under the authority of sections 103, 113, 119, 201 and 1402, 1407, 1421 and 1426; and the delegations of authority at 49 CFR 1.51 and 49 CFR 501.8.

Issued on October 26, 1972.

Robert L. Carter  
Associate Administrator  
Motor Vehicle Programs

**38 F.R. 23742**

**November 8, 1972**



**TABLE 1. LIST OF ALPHA-NUMERIC CODE ASSIGNMENTS TO NEW TIRE MANUFACTURERS**  
 (Based on the following Alpha-numeric code with letters: ABCDEFHJKLMNPTUVWXY  
 and Nos. 123456789)

<i>Code No.</i>	<i>New Tire Manufacturers</i>	<i>Code No.</i>	<i>New Tire Manufacturers</i>
AA-----	The General Tire Co.	DP-----	The Dunlop Tire & Rubber Corp. (England).
AB-----	The General Tire Co.	DT-----	The Dunlop Tire & Rubber Corp. (Australia).
AC-----	The General Tire Co.	DU-----	The Dunlop Tire & Rubber Corp. (Australia).
AD-----	The General Tire Co.	DV-----	Vredestein (The Netherlands).
AE-----	The General Tire Co. (Spain).	DW-----	Vredestein (The Netherlands).
AF-----	The General Tire Co. (Portugal).	DX-----	Vredestein Radium (The Netherlands).
AH-----	The General Tire Co. (Mexico).	DY-----	Denman Rubber Manufacturing Co.
AJ-----	Uniroyal, Inc.	EA-----	Metzeler A.G. (Germany).
AK-----	Uniroyal, Inc.	EB-----	Metzeler A.G. (Germany).
AL-----	Uniroyal, Inc.	EC-----	Metzeler A.G. (Germany).
AM-----	Uniroyal, Inc.	ED-----	Okamoto Riken Gomu Co., Ltd. (Japan).
AN-----	Uniroyal, Inc.	EE-----	Nitto Tire Co., Ltd. (Japan).
AP-----	Uniroyal, Inc.	EF-----	Hung Ah Tire Co., Ltd. (Korea).
AT-----	Avon Rubber Co. (England).	EH-----	Bridgestone Tire Co., Ltd. (Japan).
AU-----	Uniroyal, Ltd. (Canada).	EJ-----	Bridgestone Tire Co., Ltd. (Japan).
AV-----	The Sieberling Tire & Rubber Co.	EK-----	Bridgestone Tire Co., Ltd. (Japan).
AW-----	Samson Tire & Rubber Co., Ltd. (Israel).	EL-----	Bridgestone Tire Co., Ltd. (Japan).
AX-----	Phoenix Gummiwerke A.G. (Germany).	EM-----	Bridgestone Tire Co., Ltd. (Japan).
AY-----	Phoenix Gummiwerke A.G. (Germany).	EN-----	Bridgestone Tire Co., Ltd. (Japan).
BA-----	The B. F. Goodrich Co.	EP-----	Bridgestone Tire Co., Ltd. (Japan).
BB-----	The B. F. Goodrich Co.	ET-----	Sumitomo Rubber Industries, Ltd. (Japan).
BC-----	The B. F. Goodrich Co.	EU-----	Sumitomo Rubber Industries, Ltd. (Japan).
BD-----	The B. F. Goodrich Co.	EV-----	Kleber-Colombes Co. (France).
BE-----	The B. F. Goodrich Co.	EW-----	Kleber-Colombes Co. (France).
BF-----	The B. F. Goodrich Co.	EX-----	Kleber-Colombes Co. (France).
BH-----	The B. F. Goodrich Co. (Canada).	EY-----	Kleber-Colombes Co. (France).
BJ-----	The B. F. Goodrich Co. (Germany).	FA-----	The Yokohama Rubber Co., Ltd. (Japan).
BK-----	The B. F. Goodrich Co. (Brazil).	FB-----	The Yokohama Rubber Co., Ltd. (Japan).
BL-----	The B. F. Goodrich Co. (Colombia).	FC-----	The Yokohama Rubber Co., Ltd. (Japan).
BM-----	The B. F. Goodrich Co. (Australia).	FD-----	The Yokohama Rubber Co., Ltd. (Japan).
BN-----	The B. F. Goodrich Co. (Philippines).	FE-----	The Yokohama Rubber Co., Ltd. (Japan).
BP-----	The B. F. Goodrich Co. (Iran).	FF-----	Michelin Tire Corp. (France).
BT-----	Semperit Gummiwerke A.G. (Austria).	FH-----	Michelin Tire Corp. (France).
BU-----	Semperit Gummiwerke A.G. (Ireland).	FJ-----	Michelin Tire Corp. (France).
BV-----	IRI International Rubber Co.	FK-----	Michelin Tire Corp. (France).
BW-----	The Gates Rubber Co.	FL-----	Michelin Tire Corp. (France).
BX-----	The Gates Rubber Co.	FM-----	Michelin Tire Corp. (France).
BY-----	The Gates Rubber Co.	FN-----	Michelin Tire Corp. (France).
CA-----	The Mohawk Rubber Co.	FP-----	Michelin Tire Corp. (Algeria).
CB-----	The Mohawk Rubber Co.	FT-----	Michelin Tire Corp. (Germany).
CC-----	The Mohawk Rubber Co.	FU-----	Michelin Tire Corp. (Germany).
CD-----	Alliance Tire & Rubber Co., Ltd. (Israel).	FV-----	Michelin Tire Corp. (Germany).
CE-----	The Armstrong Rubber Co.	FW-----	Michelin Tire Corp. (Germany).
CF-----	The Armstrong Rubber Co.	FX-----	Michelin Tire Corp. (Belgium).
CH-----	The Armstrong Rubber Co.	FY-----	Michelin Tire Corp. (The Netherlands).
CJ-----	Inoue Rubber Co., Ltd. (Japan).	HA-----	Michelin Tire Corp. (Spain).
CK-----	Not assigned.	HB-----	Michelin Tire Corp. (Spain).
CL-----	Not assigned.	HC-----	Michelin Tire Corp. (Spain).
CM-----	Continental Gummiwerke A.G. (Germany).	HD-----	Michelin Tire Corp. (Italy).
CN-----	Continental Gummiwerke A.G. (France).	HE-----	Michelin Tire Corp. (Italy).
CP-----	Continental Gummiwerke A.G. (Germany).	HF-----	Michelin Tire Corp. (Italy).
CT-----	Continental Gummiwerke A.G. (Germany).	HH-----	Michelin Tire Corp. (Italy).
CU-----	Continental Gummiwerke A.G. (Germany).	HJ-----	Michelin Tire Corp. (United Kingdom).
CV-----	The Armstrong Rubber Co.	HK-----	Michelin Tire Corp. (United Kingdom).
CW-----	The Toyo Rubber Industry Co., Ltd. (Japan).	HL-----	Michelin Tire Corp. (United Kingdom).
CX-----	The Toyo Rubber Industry Co., Ltd. (Japan).	HM-----	Michelin Tire Corp. (United Kingdom).
CY-----	McCreary Tire & Rubber Co.	HN-----	Michelin Tire Corp. (Canada).
DA-----	The Dunlop Tire & Rubber Corp.	HP-----	Michelin Tire Corp. (South Vietnam).
DB-----	The Dunlop Tire & Rubber Corp.	HT-----	CEAT (Italy).
DC-----	The Dunlop Tire & Rubber Corp. (Canada).	HU-----	CEAT (Italy).
DD-----	The Dunlop Tire & Rubber Corp. (England).	HV-----	CEAT (Italy).
DE-----	The Dunlop Tire & Rubber Corp. (England).	HW-----	Withdrawn.
DF-----	The Dunlop Tire & Rubber Corp. (England).	HX-----	The Dayton Tire & Rubber Co.
DH-----	The Dunlop Tire & Rubber Corp. (Scotland).	HY-----	The Dayton Tire & Rubber Co.
DJ-----	The Dunlop Tire & Rubber Corp. (Ireland).	JA-----	The Lee Tire & Rubber Co.
DK-----	The Dunlop Tire & Rubber Corp. (France).	JB-----	The Lee Tire & Rubber Co.
DL-----	The Dunlop Tire & Rubber Corp. (France).	JC-----	The Lee Tire & Rubber Co.
DM-----	The Dunlop Tire & Rubber Corp. (Germany).	JD-----	The Lee Tire & Rubber Co.
DN-----	The Dunlop Tire & Rubber Corp. (Germany).		

Code No.	New Tire Manufacturers
JE	The Lee Tire & Rubber Co.
JF	The Lee Tire & Rubber Co.
JH	The Lee Tire & Rubber Co.
JJ	The Lee Tire & Rubber Co.
JK	The Lee Tire & Rubber Co.
JL	The Lee Tire & Rubber Co.
JM	The Lee Tire & Rubber Co.
JN	The Lee Tire & Rubber Co.
JP	The Lee Tire & Rubber Co.
JT	The Lee Tire & Rubber Co.
JU	The Lee Tire & Rubber Co. (Canada).
JV	The Lee Tire & Rubber Co. (Canada).
JW	The Lee Tire & Rubber Co. (Canada).
JX	Lee Tire & Rubber Co. (Canada).
JY	Lee Tire & Rubber Co. (Argentina).
KA	Lee Tire & Rubber Co. (Australia).
KB	Lee Tire & Rubber Co. (Australia).
KC	Lee Tire & Rubber Co. (Brazil).
KD	Lee Tire & Rubber Co. (Colombia).
KE	Lee Tire & Rubber Co. (Republic of Congo).
KF	Lee Tire & Rubber Co. (France).
KH	Lee Tire & Rubber Co. (Germany).
KJ	Lee Tire & Rubber Co. (Germany).
KK	Lee Tire & Rubber Co. (Greece).
KL	Lee Tire & Rubber Co. (Guatemala).
KM	Lee Tire & Rubber Co. (Luxembourg).
KN	Lee Tire & Rubber Co. (India).
KP	Lee Tire & Rubber Co. (Indonesia).
KT	Lee Tire & Rubber Co. (Italy).
KU	Lee Tire & Rubber Co. (Jamaica).
KV	Lee Tire & Rubber Co. (Mexico).
KW	Lee Tire & Rubber Co. (Peru).
KX	Lee Tire & Rubber Co. (Philippines).
KY	Lee Tire & Rubber Co. (Scotland).
LA	Lee Tire & Rubber Co. (South Africa).
LB	Lee Tire & Rubber Co. (Sweden).
LC	Lee Tire & Rubber Co. (Thailand).
LD	Lee Tire & Rubber Co. (Turkey).
LE	Lee Tire & Rubber Co. (Venezuela).
LF	Lee Tire & Rubber Co. (England).
LH	Uniroyal, Inc. (Australia).
LJ	Uniroyal, Inc. (Belgium).
LK	Uniroyal, Inc. (Colombia).
LL	Uniroyal, Inc. (France).
LM	Uniroyal, Inc. (Germany).
LN	Uniroyal, Inc. (Mexico).
LP	Uniroyal, Inc. (Scotland).
LT	Uniroyal, Inc. (Turkey).
LU	Uniroyal, Inc. (Venezuela).
LV	Mansfield-Denman-General Co., Ltd. (Canada).
LW	Trelleborg Rubber Co., Inc. (Sweden).
LX	Mitsuboshi Belting, Ltd. (Japan).
LY	Mitsuboshi Belting, Ltd. (Japan).
MA	The Goodyear Tire & Rubber Co.
MB	The Goodyear Tire & Rubber Co.
MC	The Goodyear Tire & Rubber Co.
MD	The Goodyear Tire & Rubber Co.
ME	The Goodyear Tire & Rubber Co.
MF	The Goodyear Tire & Rubber Co.
MH	The Goodyear Tire & Rubber Co.
MJ	The Goodyear Tire & Rubber Co.
MK	The Goodyear Tire & Rubber Co.
ML	The Goodyear Tire & Rubber Co.
MM	The Goodyear Tire & Rubber Co.
MN	The Goodyear Tire & Rubber Co.
MP	The Goodyear Tire & Rubber Co.
MT	The Goodyear Tire & Rubber Co.
MU	The Goodyear Tire & Rubber Co. (Argentina)
MV	The Goodyear Tire & Rubber Co., (Australia)
MW	The Goodyear Tire & Rubber Co. (Australia).
MX	The Goodyear Tire & Rubber Co. (Brazil).
MY	The Goodyear Tire & Rubber Co. (Colombia).

Code No.	New Tire Manufacturers
NA	The Goodyear Tire & Rubber Co. (Republic of Congo).
NB	The Goodyear Tire & Rubber Co. (England).
NC	The Goodyear Tire & Rubber Co. (France).
ND	The Goodyear Tire & Rubber Co. (Germany).
NE	The Goodyear Tire & Rubber Co. (Germany).
NF	The Goodyear Tire & Rubber Co. (Greece).
NH	The Goodyear Tire & Rubber Co.
NJ	The Goodyear Tire & Rubber Co. (Luxembourg).
NK	The Goodyear Tire & Rubber Co. (India).
NL	The Goodyear Tire & Rubber Co. (Indonesia).
NM	The Goodyear Tire & Rubber Co. (Italy).
NN	The Goodyear Tire & Rubber Co. (Jamaica).
NP	The Goodyear Tire & Rubber Co. (Mexico).
NT	The Goodyear Tire & Rubber Co. (Peru).
NU	The Goodyear Tire & Rubber Co. (Philippines).
NV	The Goodyear Tire & Rubber Co. (Scotland).
NW	The Goodyear Tire & Rubber Co. (South Africa).
NX	The Goodyear Tire & Rubber Co. (Sweden).
NY	The Goodyear Tire & Rubber Co. (Thailand).
PA	The Goodyear Tire & Rubber Co. (Turkey).
PB	The Goodyear Tire & Rubber Co. (Venezuela).
PC	The Goodyear Tire & Rubber Co. (Canada).
PD	The Goodyear Tire & Rubber Co. (Canada).
PE	The Goodyear Tire & Rubber Co. (Canada).
PF	The Goodyear Tire & Rubber Co. (Canada).
PH	The Kelly-Springfield Tire Co.
PJ	The Kelly-Springfield Tire Co.
PK	The Kelly-Springfield Tire Co.
PL	The Kelly-Springfield Tire Co.
PM	The Kelly-Springfield Tire Co.
PN	The Kelly-Springfield Tire Co.
PP	The Kelly-Springfield Tire Co.
PT	The Kelly-Springfield Tire Co.
PU	The Kelly-Springfield Tire Co.
PV	The Kelly-Springfield Tire Co.
PW	The Kelly-Springfield Tire Co.
PX	The Kelly-Springfield Tire Co.
PY	The Kelly-Springfield Tire Co.
TA	The Kelly-Springfield Tire Co.
TB	The Kelly-Springfield Tire Co. (Argentina).
TC	The Kelly-Springfield Tire Co. (Australia).
TD	The Kelly-Springfield Tire Co. (Australia).
TE	The Kelly-Springfield Tire Co. (Brazil).
TF	The Kelly-Springfield Tire Co. (Colombia).
TH	The Kelly-Springfield Tire Co. (Republic of Congo).
TJ	The Kelly-Springfield Tire Co. (England).
TK	The Kelly-Springfield Tire Co. (France).
TL	The Kelly-Springfield Tire Co. (Germany).
TM	The Kelly-Springfield Tire Co. (Germany).
TN	The Kelly-Springfield Tire Co. (Greece).
TP	The Kelly-Springfield Tire Co. (Guatemala).
TT	The Kelly-Springfield Tire Co. (Luxembourg).
TU	The Kelly-Springfield Tire Co. (India).
TV	The Kelly-Springfield Tire Co. (Indonesia).
TW	The Kelly-Springfield Tire Co. (Italy).
TX	The Kelly-Springfield Tire Co. (Jamaica).
TY	The Kelly-Springfield Tire Co. (Mexico).
UA	The Kelly-Springfield Tire Co. (Peru).
UB	The Kelly-Springfield Tire Co. (Philippines).
UC	The Kelly-Springfield Tire Co. (Scotland).
UD	The Kelly-Springfield Tire Co. (South Africa).
UE	The Kelly-Springfield Tire Co. (Sweden).
UF	The Kelly-Springfield Tire Co. (Thailand).
UH	The Kelly-Springfield Tire Co. (Turkey).
UJ	The Kelly-Springfield Tire Co. (Venezuela).
UK	The Kelly-Springfield Tire Co., (Canada).
UL	The Kelly-Springfield Tire Co. (Canada).
UM	The Kelly-Springfield Tire Co. (Canada).
UN	The Kelly-Springfield Tire Co. (Canada).
UP	Copper Tire & Rubber Co.

<i>Code No.</i>	<i>New Tire Manufacturers</i>
UT.....	Copper Tire & Rubber Co.
UU.....	Carlisle Tire & Rubber Division of Carlisle Corp.
UV.....	Kyowa Rubber Industry Co., Ltd. (Japan).
UW.....	Not assigned.
UX.....	Not assigned.
UY.....	Not assigned.
VA.....	The Firestone Tire & Rubber Co.
VB.....	The Firestone Tire & Rubber Co.
VC.....	The Firestone Tire & Rubber Co.
VD.....	The Firestone Tire & Rubber Co.
VE.....	The Firestone Tire & Rubber Co.
VF.....	The Firestone Tire & Rubber Co.
VH.....	The Firestone Tire & Rubber Co.
VJ.....	The Firestone Tire & Rubber Co.
VK.....	The Firestone Tire & Rubber Co.
VL.....	The Firestone Tire & Rubber Co. (Canada).
VM.....	The Firestone Tire & Rubber Co. (Canada).
VN.....	The Firestone Tire & Rubber Co. (Canada).
VP.....	The Firestone Tire & Rubber Co. (Italy).
VT.....	The Firestone Tire & Rubber Co. (Spain).
VU.....	Withdrawn.
VV.....	The Firestone Tire & Rubber Co. (Sweden).
VW.....	The Firestone Tire & Rubber Co (Japan).
VX.....	The Firestone Tire & Rubber Co. (England).
VY.....	The Firestone Tire & Rubber Co. (Wales).
WA.....	The Firestone Tire & Rubber Co. (France).
WB.....	The Firestone Tire & Rubber Co. (Costa Rica).
WC.....	The Firestone Tire & Rubber Co. (Australia).
WD.....	The Firestone Tire & Rubber Co. (Switzerland).

<i>Code No.</i>	<i>New Tire Manufacturers</i>
WE.....	Withdrawn.
WF.....	The Firestone Tire & Rubber Co. (Spain).
WH.....	The Firestone Tire & Rubber Co. (Sweden).
WJ.....	The Firestone Tire & Rubber Co. (Australia).
WK.....	Pennsylvania Tire & Rubber Company of Mississippi.
WL.....	The Mansfield Tire & Rubber Co.
WM.....	Olympic Tire & Rubber Co. Pty., Ltd. (Australia).
WN.....	Olympic Tire & Rubber Co Pty., Ltd. (Australia).
WP.....	Sehenuit Industries, Inc.
WT.....	Madras Rubber Factory, Ltd. (India).
WU.....	Not Assigned.
WV.....	Not Assigned.
WW.....	Not Assigned.
WX.....	Not Assigned.
WY.....	Not Assigned.
XA.....	Pirelli Tire Corp. (Italy).
XB.....	Pirelli Tire Corp. (Italy).
XC.....	Pirelli Tire Corp. (Italy).
XD.....	Pirelli Tire Corp. (Italy).
XE.....	Pirelli Tire Corp. (Italy).
XF.....	Pirelli Tire Corp. (Spain).
XH.....	Pirelli Tire Corp. (Greece).
XJ.....	Pirelli Tire Corp. (Turkey).
XK.....	Pirelli Tire Corp. (Brazil).
XL.....	Pirelli Tire Corp. (Brazil).
XM.....	Pirelli Tire Corp. (Argentina).
XN.....	Pirelli Tire Corp. (England).
XP.....	Pirelli Tire Corp. (England).
XT.....	Veith-Pirelli A.G. (Germany).

**TABLE 2. LIST OF NEW TIRE MANUFACTURERS AND CORRESPONDING IDENTIFICATION CODE MARKS**

(Based on the following Alpha-numeric code with letters:  
**ABCDEFGHIJKLMNPZVWXY and Nos. 123456789)**

<i>Manufacturer</i>	<i>Identification code</i>	<i>Manufacturer</i>	<i>Identification code</i>
Alliance Tire & Rubber Co., Ltd.	CD.	The Lee Tire & Rubber Co.	JA, JB, JC, JD, JE, JF, JH, JJ, JK, JL, JM, JN, JP, JT, JU, JV, JW, JX, JY, KA, KB, KC, KD, KE, KF, KH, KJ, KK, KL, KM, KN, KP, KT, KU, KV, KW, KX, KY, LA, LB, LC, LD, LE, LF.
The Armstrong Rubber Co.	CE, CF, CH, CV.	Madras Rubber Factory, Ltd.	WT.
Avon Rubber Co.	AT.	The Mansfield Tire & Rubber Co.	WL.
Bridgestone Tire Co., Ltd.	EH, EJ, EK, EL, EM, EN, EP.	Co.	
Carlisle Tire & Rubber Division of Carlisle Corp.	UU.	Mansfield-Deman-General Co., Ltd.	LV.
Ceat.	HT, HU, HV.	McCreary Tire & Rubber Co.	CY.
Continental A.G.	CM, CN, CP, CT, CU.	Metzeler A.G.	EA, EB, EC.
Copper Tire & Rubber Co.	UP, UT.	Michelin Tire Corp.	FF, FH, FJ, FK, FL, FM, FN, FP, FT, FU, FV, FW, FX, FY, HA, HB, HC, HD, HE, HF, HH, HJ, HK, HL, HM, HN, HP.
The Dayton Tire & Rubber Co.	HX, HY.	Mitsuboshi Belting, Ltd.	LX, LY.
Denman Rubber Manufacturing Co.	DY.	The Mohawk Rubber Co.	CA, CB, CC
The Dunlap Tire & Rubber Co.	DA, DB, DC, DD, DE, DF, DH, DJ, DK, DL, DM, DN, DP, DU.	Nitto Tire Co., Ltd.	EE.
The Firestone Tire & Rubber Co.	VA, VB, VC, VD, VE, VF, VH, VJ, VK, VL, VM, VN, VP, VT, VV, VW, VX, VY, WA, WB, WC, WD, WF, WH, WJ.	Okamoto Riken Gumo Co., Ltd.	ED.
The Gates Rubber Co.	BW, BX, BY.	Olympic Tire & Rubber Co. Pty., Ltd.	WM, WN.
The General Tire & Rubber Co.	AA, AB, AC, AD, AE, AF, AH.	Pennsylvania Tire & Rubber Company of Mississippi.	WK.
The B. F. Goodrich Co.	BA, BB, BC, BD, BE, BF, BH, BJ, BK, BL, BM, BN, BP.	Phoenix Gummiwerke A.G.	AX AY.
The Goodyear Tire & Rubber Co.	MA, MB, MC, MD, ME, MF, MH, MJ, MK, ML, MM, MN, MP, MT, MU, MV, MW, MX, MY, NA, NB, NC, ND, NE, NF, NH, NJ, NK, NL, NM, NN, NP, NT, NU, NV, NW, NX, NY, PA, PB, PC, PD, PE, PF.	Pirelli Tire Corp.	XA, XB, XC, XD, XE, XF, XH, XJ, XK, XL, XM, XN, XP.
Hung Ah Tire Co., Ltd.	EF	Samson Tire & Rubber Co., Ltd.	AW.
IRI International BV. Rubber Co.	BV	Schenuit Industries, Inc.	WP.
Inoue Rubber Co., CJ. Ltd.	CJ	The Seiberling Tire & Rubber Co.	AV.
The Kelly-Springfield Tire Co.	PH, PJ, PK, PL, PM, PN, PP, PT, PU, PV, PW, PX, PY, TA, TB, TC, TD, TE, TF, TH, TJ, TK, TL, TM, TN, TP, TT, TU, TV, TW, TX, TY, UA, UB, UC, UD, UE, UF, UH, UJ, UK, UL, UM, UN.	Semperit Gummiwerke A.G.	BT, BU.
Kleber-Colombes Co.	EV, EW, EX, EY.	Sumitomo Rubber Industries.	ET, EU.
Kyowa Rubber Ind. Co., Ltd.		The Toyo Rubber Industry Co., Ltd.	CW, CX.
		Trelleborg Rubber Co.	LW.
		Uniroyal Inc.	AJ, AK, AL, AM, AN, AP, AU, LH, LJ, LK, LL, LM, LN, LP, LT, LU.
		Veith-Pirelli A.G.	XT.
		Vredestein.	DV, DW.
		Vredestein-Radium.	DX.
		The Yokohama Rubber Co., Ltd.	FA, FB, FC, FD, FE.

TABLE 3. TIRE SIZE CODES

Tire Size Code	Tire Size Designation <sup>1</sup>	Tire Size Code	Tire Size Designation <sup>1</sup>	Tire Size Code	Tire Size Designation <sup>1</sup>
AA	4.00-4	B7	5.00 R 12	D4	6.00 R 13
AB	3.50-4	B8	5.20-12	D5	6.2-13
AC	3.00-5	B9	5.20-12 LT	D6	6.20-13
AD	4.00-5	CA	5.20 R 12	D7	6.40-13
AE	3.50-5	CB	5.30-12	D8	6.40-13 LT
AF	6.90-6	CC	5.50-12	D9	6.40 R 13
AH	3.00-8	CD	5.50-12 LT	EA	6.50-13
AJ	3.50-6	CE	5.50 R 12	EB	6.50-13 LT
AK	4.10-6	CF	5.60-12	EC	6.50-13 ST
AL	4.50-6	CH	5.60-12 LT	ED	6.50 R 13
AM	5.30-6	CJ	5.60 R 12	EE	6.70-13
AN	6.00-6	CK	5.9-12	EF	6.70-13 LT
AP	3.25-8	CL	5.90-12	EH	6.70 R 13
AT	3.50-8	CM	6.00-12	EJ	6.9-13
AU	3.00-7	CN	6.00-12 LT	EK	6.90-13
AV	4.00-7	CP	6.2-12	EL	7.00-13
AW	4.80-7	CT	6.20-12	EM	7.00-13 LT
AX	5.30-7	CU	6.90-12	EN	7.00 R 13
AY	5.00-8	CV	23.5 X 8.5-12	EP	7.25-13
A1	H60-14	CW	125-12	ET	7.25 R 13
A2	4.00-8	CX	125 R 12	EU	7.50-13
A3	4.80-8	CY	125-12/5.35-12	EV	135-13
A4	5.70-8	C1	135-12	EW	135 R 13
A5	16.5 X 6.5-8	C2	135 R 12	EX	135-13/5.65-13
A6	18.5 X 8.5-8	C3	135-12/5.65-12	EY	145-13
A7	CR70-14	C4	145-12	E1	145 R 13
A8	2.75-9	C5	145 R 12	E2	145-13/5.95-13
A9	4.80-9	C6	145-12/5.95-12	E3	150 R 13
BA	6.00-9	C7	155-12	E4	155-13
BB	6.90-9	C8	155 R 12	E5	155 R 13
BC	3.50-9	C9	155-12/6.15-12	E6	155-13/6.15-13
BD	4.00-10	DA	4.80-10	E7	160 R 13
BE	3.00-10	DB	3.25-12	E8	165-13
BF	3.50-10	DC	3.50-12	E9	165 R 13
BH	5.20-10	DD	4.50-12 LT	FA	165-13/6.45-13
BJ	5.20 R 10	DE	5.00-12 LT	FB	165/70 R 13
BK	5.9-10	DF	7.00-12	FC	170 R 13
BL	5.90-10	DH	5.00-13	FD	175-13
BM	6.50-10	DJ	5.00-13 LT	FE	175 R 13
BN	7.00-10	DK	5.00 R 13	FF	175-13/6.95-13
BP	7.50-10	DL	5.20-13	FH	175/70 R 13
BT	9.00-10	DM	5.20 R 13	FJ	185-13
BU	20.5 X 8.0-10	DN	5.50-13	FK	185 R 13
BV	145-10	DP	5.50-13 LT	FL	185-13/7.35-13
BW	145 R 10	DT	5.50 R 13	FM	185/70 R 13
BX	145-10/5.95-10	DU	5.60-13	FN	195-13
BY	4.50-10 LT <sup>2</sup>	DV	5.60-13 LT	FP	195 R 13
B1	5.00-10 LT	DW	5.60 R 13	FT	195/70 R 13
B2	3.00-12	DX	5.90-13	FU	D70-13
B3	4.00-12	DY	5.90-13 LT	FV	B78-13
B4	4.50-12	D1	5.90 R 13	FW	BR78-13
B5	4.80-12	D2	6.00-13	FX	C78-13
B6	5.00-12	D3	6.00-13 LT	FY	7.50-12

<sup>1</sup>The letters "H", "S", and "V" may be included in the tire size designation adjacent to or in place of a dash without affecting the size code for the designation.

<sup>2</sup>As used in this table the letters at the end of the tire size indicate the following: LT—Light Truck, ML—Mining & Logging, MH—Mobile Home, ST—Special Trailer.

TABLE 3. TIRE SIZE CODES—Continued

Tire Size Code	Tire Size Designation <sup>1</sup>	Tire Size Code	Tire Size Designation <sup>1</sup>	Tire Size Code	Tire Size Designation <sup>1</sup>
F1	140 R 12	J3	175 R 14	L5	E78-14
F2	6.5-13	J4	185-14	L6	ER78-14
F3	185/60 R 13	J5	185 R 14	L7	F78-14
F4	A70-13	J6	185/70 R 14	L8	FR78-14
F5	A78-13	J7	195-14	L9	G78-14
F6	CR78-13	J8	195 R 14	MA	GR78-14
F7	2.25-14	J9	195/70 R 14	MB	H78-14
F8	2.75-14	KA	205-14	MC	HR78-14
F9	3.00-14	KB	205 R 14	MD	J78-14
HA	6.70-14 LT	KC	215-14	ME	JR78-14
HB	165-14 LT	KD	215 R 14	MF	205-14 LT
HC	2.50-14	KE	225-14	MH	G80-24.5
HD	5.00-14 LT	KF	225 R 14	MJ	H80-24.5
HE	5.20-14	KH	620 R 14	MK	7-14.5
HF	5.20 R 14	KJ	690 R 14	ML	8-14.5
HH	5.50-14 LT	KK	AR78-13	MM	9-14.5
HJ	5.60-14	KL	195-14 LT	MN	6.60 R 15
HK	5.90-14	KM	185-14 LT	MP	2.00-15
HL	5.90-14 LT	KN	A80-22.5	MT	2.25-15
HM	5.90 R 14	KP	B80-22.5	MU	2.50-15
HN	6.00-14	KT	C80-22.5	MV	3.00-15
HP	6.00-14 LT	KU	D80-22.5	MW	3.25-15
HT	6.40-14	KV	E80-22.5	MX	5.0-15
HU	6.40-14 LT	KW	F60-14	MY	5.20-15
HV	6.45-14	KX	G60-14	M1	5.5-15
HW	6.50-14	KY	J60-14	M2	5.50-15 L
HX	6.50-14 LT	K1	L60-14	M3	5.50-15 LT
HY	6.70-14	K2	F80-22.5	M4	5.60-15
H1	6.95-14	K3	G80-22.5	M5	5.60 R 15
H2	7.00-14	K4	H80-22.5	M6	5.90-15
H3	7.00-14 LT	K5	J80-22.5	M7	5.90-15 LT
H4	7.00 R 14	K6	A80-24.5	M8	6.00-15
H5	7.35-14	K7	B80-24.5	M9	6.00-15 L
H6	7.50-14	K8	BR78-14	NA	6.00-15 LT
H7	7.50-14 LT	K9	D70-14	NB	6.2-15
H8	7.50 R 14	LA	DR70-14	NC	6.40-15
H9	7.75-14	LB	E70-14	ND	6.40-15 LT
JA	7.75-14 ST	LC	ER70-14	NE	6.40 R 15
JB	8.00-14	LD	F70-14	NF	6.50-15
JC	8.25-14	LE	FR70-14	NH	6.50-15 L
JD	8.50-14	LF	G70-14	NJ	6.50-15 LT
JE	8.55-14	LH	GR70-14	NK	6.70-15
JF	8.85-14	LJ	H70-14	NL	6.70-15 LT
JH	9.00-14	LK	HR70-14	NM	6.70 R 15
JJ	9.50-14	LL	J70-14	NN	6.85-15
JK	135-14	LM	JR70-14	NP	6.9-15
JL	135 R 14	LN	L70-14	NT	7.00-15
JM	135-14/5.65-14	LP	LR70-14	NU	7.00-15 L
JN	145-14	LT	C80-24.5	NV	7.00-15 LT
JP	145 R 14	LU	D80-24.5	NW	7.10-15
JT	145-14/5.95-14	LV	E80-24.5	NX	7.10-15 LT
JU	155-14	LW	F80-24.5	NY	7.35-15
JV	155 R 14	LX	G77-14	N1	7.50-15
JW	155-14/6.15-14	LY	B78-14	N2	7.60-15
JX	155/70 R 14	L1	C78-14	N3	7.60 R 15
JY	165-14	L2	CR78-14	N4	7.75-15
J1	165 R 14	L3	D78-14	N5	7.75-15 ST
J2	175-14	L4	DR78-14	N6	8.00-15

TABLE 3. TIRE SIZE CODES—Continued

Tire Size Code	Tire Size Designation <sup>1</sup>	Tire Size Code	Tire Size Designation <sup>1</sup>	Tire Size Code	Tire Size Designation <sup>1</sup>
N7	8.15-15	T9	205/70 R 14	WB	11.00-15
N8	8.20-15	UA	215/70 R 14	WC	2.25-16
N9	8.25-15	UB	H60-15	WD	2.50-16
PA	8.25-15 LT	UC	E60-15	WE	3.00-16
PB	8.45-15	UD	F60-15	WF	3.25-16
PC	8.55-15	UE	FR60-15	WH	3.50-16
PD	8.85-15	UF	G60-15	WJ	5.00-16
PE	8.90-15	UH	GR60-15	WK	5.10-16
PF	9.00-15	UJ	J60-15	WL	5.50-16 LT
PH	9.00-15 LT	UK	L60-15	WM	6.00-16
PJ	9.15-15	UL	4.60-15	WN	6.00-16 LT
PK	10-15	UM	2.75-15	WP	6.50-16
PL	10.00-15	UN	2.50-9	WT	6.50-16 LT
PM	7.50-15 LT	UP	2.50-10	WU	6.70-16
PN	7.00-15 TR	UT	5.00-9	WV	7.00-16
PP	8.25-15 TR	UU	6.7-10	WW	7.00-16 LT
PT	9.00-15 TR	UV	C70-15	WX	7.50-16
PU	7.50-15 TR	UW	D70-15	WY	7.50-16 LT
PV	125-15	UX	DR70-15	W1	8.25-16
PW	125 R 15	UY	E70-15	W2	9.00-16
PX	125-15/5.35-15	U1	ER70-15	W3	10-16
PY	135-15	U2	F70-15	W4	8.25-16 LT
P1	135 R 15	U3	FR70-15	W5	9.00-16 LT
P2	135-15/5.65-15	U4	G70-15	W6	11.00-16
P3	145-15	U5	GR70-15	W7	19-400 C
P4	145 R 15	U6	H70-15	W8	165-400
P5	145-15/5.95-15	U7	HR70-15	W9	235-16
P6	155-15	U8	J70-15	XA	185-16
P7	155 R 15	U9	JR70-15	XB	19-400 LT
P8	155-15/6.35-15	VA	K70-15	XC	G45C-16
P9	165-15	VB	KR70-15	XD	E50C-16
TA	165-15 LT	VC	L70-15	XE	F50C-16
TB	165 R 15	VD	LR70-15	XF	7.00-16 TR
TC	175-15	VE	17-400 TR	XH	7.50-16 TR
TD	175 R 15	VF	185-300 TR	XJ	8.00-16.5
TE	175-15/7.15-15	VH	185-300 LT	XK	8.75-16.5
TF	175/70 R 15	VJ	AR78-15	XL	9.50-16.5
TH	180-15	VK	BR78-15	XM	10-16.5
TJ	185-15	VL	C78-15	XN	12-16.5
TK	185 R 15	VM	D78-15	XP	185 R 16
TL	185/70 R 15	VN	E78-15	XT	4.50-17
TM	195-15	VP	ER78-15	XU	2.00-17
TN	195 R 15	VT	F78-15	XV	2.25-17
TP	205-15	VU	FR78-15	XW	2.50-17
TT	205 R 15	VV	G78-15	XX	2.75-17
TU	215-15	VW	GR78-15	XY	3.00-17
TV	215 R 15	VX	H78-15	X1	3.25-17
TW	225-15	VY	HR78-15	X2	3.50-17
TX	225 R 15	V1	J78-15	X3	6.50-17
TY	235-15	V2	JR78-15	X4	6.50-17 LT
T1	235 R 15	V3	L78-15	X5	7.00-17
T2	J80-24.5	V4	LR78-15	X6	7.50-17
T3	ER60-15	V5	N78-15	X7	8.25-17
T4	D78-13	V6	17-15 (17-380 LT)	X8	7.50-17 LT
T5	A78-15	V7	17-400 LT	X9	225/70 R 14
T6	DR70-13	V8	11-15	YA	G50C-17
T7	HR60-15	V9	11-16	YB	H50C-17
T8	E60-14	WA	L84-15	YC	195/70 R 15

TABLE 3. TIRE SIZE CODES—Continued

Tire Size Code	Tire Size Designation <sup>1</sup>	Tire Size Code	Tire Size Designation <sup>1</sup>	Tire Size Code	Tire Size Designation <sup>1</sup>
YD	4.20-18	2F	9.00-20	4J	13.5-24.5
YE	8-17.5 LT	2H	9.4-20	4K	7.00-20 ML
YF	11-17.5	2J	10.00-20	4L	7.50-20 ML
YH	7-17.5	2K	10.3-20	4M	8.25-20 ML
YJ	8-17.5	2L	11.00-20	4N	9.00-20 ML
YK	8.5-17.5	2M	11.1-20	4P	10.00-20 ML
YL	9.5-17.5	2N	11.50-20	4T	10.00-22 ML
YM	10-17.5	2P	11.9-20	4U	10.00-24 ML
YN	14-17.5	2T	12.00-20	4V	11.00-20 ML
YP	9-17.5	2U	12.5-20	4W	11.00-22 ML
YT	205/70 R 15	2V	13.00-20	4X	11.00-24 ML
YU	2.25-18	2W	14.00-20	4Y	11.00-25 ML
YV	2.50-18	2X	6.50-20 LT	41	12.00-20 ML
YW	2.75-18	2Y	7.00-20 LT	42	12.00-21 ML
YX	3.00-18	21	13/80-20	43	12.00-24 ML
YY	3.25-18	22	14/80-20	44	12.00-25 ML
Y1	3.50-18	23	2.75-21	45	13.00-20 ML
Y2	4.00-18	24	3.00-21	46	13.00-24 ML
Y3	4.50-18	25	2.50-21	47	13.00-25 ML
Y4	6.00-18	26	2.75-20	48	14.00-20 ML
Y5	7.00-18	27	10.00-22	49	14.00-21 ML
Y6	7.50-18	28	11.00-22	5A	14.00-24 ML
Y7	8.25-18	29	11.1-22	5B	14.00-25 ML
Y8	9.00-18	3A	11.9-22	5C	10.3-20 ML
Y9	10.00-18	3B	12.00-22	5D	11.1-20 ML
1A	11.00-18	3C	14.00-22	5E	12.5-20 ML
1B	6.00-18 LT	3D	11.50-22	5F	9-22.5 ML
1C	6.00-20 LT	3E	4.10-18	5H	9.4-22.5 ML
1D	L50C-18	3F	4.10-19	5J	10-22.5 ML
1E	7.00-18 LT	3H	7-22.5	5K	10.3-22.5 ML
1F	12-19.5	3J	8-22.5	5L	11-22.5 ML
1H	2.00-19	3K	8.5-22.5	5M	11-24.5 ML
1J	2.25-19	3L	9-22.5	5N	14-17.5 ML
1K	2.50-19	3M	9.4-22.5	5P	15-19.5 ML
1L	2.75-19	3N	10-22.5	5T	15-22.5 ML
1M	3.00-19	3P	10.3-22.5	5U	16.5-19.5 ML
1N	3.25-19	3T	11-22.5	5V	16.5-22.5 ML
1P	3.50-19	3U	11.1-22.5	5W	18-19.5 ML
1T	4.00-19	3V	11.5-22.5	5X	18-22.5 ML
1U	11.00-19	3W	11.9-22.5	5Y	19.5-19.5 ML
1V	9.5-19.5	3X	12-22.5	51	23-23.5 ML
1W	10-19.5	3Y	12.5-22.5	52	18-21 ML
1X	11-19.5	31	15-22.5	53	19.5-21 ML
1Y	7-19.5	32	16.5-22.5	54	23-21 ML
11	7.5-19.5	33	18-22.5	55	6.00-13 ST
12	8-19.5	34	215/70 R 15	56	7.35-14 ST
13	9-19.5	35	225/70 R 15	57	8.25-14 ST
14	14-19.5	36	185/60 R 13	58	7.35-15 ST
15	15-19.5	37	9.00-24	59	8.25-15 ST
16	16.5-19.5	38	10.00-24	6A	12.00-22 ML
17	18-19.5	39	11.00-24	6B	4.30-18
18	19.5-19.5	4A	12.00-24	6C	3.60-19
19	6.00-20	4B	14.00-24	6D	3.00-20
2A	6.50-20	4C	3.50-7	6E	4.25-18
2B	7.00-20	4D	3.00-4	6F	MP90-18
2C	7.50-20	4E	12.5-24.5	6H	3.75-19
2D	8.25-20	4F	11-24.5	6J	MM90-19
2E	8.5-20	4H	12-24.5	6K	3.25-7

TABLE 3. TIRE SIZE CODES—Continued

Tire Size Code	Tire Size Designation <sup>1</sup>	Tire Size Code	Tire Size Designation <sup>1</sup>	Tire Size Code	Tire Size Designation <sup>1</sup>
6L	2.75-16	8N	2-22½	0T	Not Assigned
6M	4.00-16	8P	2¼-15	0U	BR60-13
6N	7-9	8T	2¼-16	0V	15.00-20
6P	25X 7.50-15	8U	2¼-17	0W	16.00-20
6T	27X 8.50-15	8V	2¼-18	0X	12/80-20
6U	27X 9.50-15	8W	2¼-19	0Y	14/80-24
6V	29X 12.00-15	8X	2¼-19 R	01	15.5/80-20
6W	31X 13.50-15	8Y	2¼-20	02	13-22.5
6X	31X 15.50-15	81	2½-8	03	21-22.5
6Y	C70-14	82	2½-9	04	9/70-22.5
61	Not Assigned	83	2½-16	05	10/70-22.5
62	Not Assigned	84	2½-17	06	11/70-22.5
63	Not Assigned	85	2½-18	07	12/70-22.5
64	Not Assigned	86	2½-19	08	13/70-22.5
65	Not Assigned	87	2½-19 R	09	7.25/75-17.5
66	3.40-5	88	2¾-9	10	8.00/75-17.5
67	4.10-4	89	2¾-16	20	8.75/75-17.5
68	4.10-5	9A	2¾-17	30	9.50/75-17.5
69	175-14 LT	9B	2¾-17 R	40	7.25/75-16.5
7A	11-14	9C	3-10	50	8.00/75-16.5
7B	E78-14 LT	9D	3-12	60	8.75/75-16.5
7C	G78-15 LT	9E	21 x 4	70	9.50/75-16.5
7D	H78-15 LT	9F	22 x 4½	80	6.70-14 C
7E	180 R 15	9H	15.50-20	90	7-17.5 C
7F	185-16 LT	9J	18.50-20	RA	125-12 C
7H	205-16 LT	9K	19.50-20	RB	125-13 C
7J	215-16 LT	9L	2¼-14	RC	125-14 C
7K	F78-16 LT	9M	2½-20	RD	125-15 C
7L	H78-16 LT	9N	2¾-16 R	RE	135-12 C
7M	L78-16 LT	9P	2¾-18	RF	135-13 C
7N	135 R 10	9T	10-20	RH	135-14 C
7P	6.95-14 LT	9U	11-24	RJ	135-15 C
7T	7-14.5 MH	9V	11.25-24	RK	145-10 C
7U	8-14.5 MH	9W	15 x 4½-8	RL	145-12 C
7V	9-14.5 MH	9X	14.75/80-20	RM	145-13 C
7W	4.25/85-18	9Y	23 x 5	RN	145-14 C
7X	A78-14	91	25 x 6	RP	145-15 C
7Y	7.50-18 MPT	92	15 x 4½-8	RT	155-12 C
71	10.5-18 MPT	93	18 x 7-8	RU	155-13 C
72	12.5-18 MPT	94	21 x 8-9	RV	155-14 C
73	12.5-20 MPT	95	23 x 9-10	RW	155-15 C
74	14.5-20 MPT	96	27 x 10-12	RX	A60-13
75	10.5-20 MPT	97	2.00-15 TR	RY	C60-15
76	10.5-20	98	2.50-15 TR	R1	155-16 C
77	8.25-10	99	3.00-15 TR	R2	165-13 C
78	150 R 12	0A	GR60-14	R3	165-16 C
79	150 R 14	0B	560 x 165-11	R4	175-13 C
8A	1¾-19	0C	680 x 180-15	R5	175-15 C
8B	1¾-19¾	0D	8.55-15 ST	R6	175-16 C
8C	2-12	0E	3.50-14	R7	185-13 C
8D	2-16	0F	3.25-14	RS	185-15 C
8E	2-17	0H	3.50-15	R9	195-15 C
8F	2-17 R	0J	AR70-13	A0	195-16 C
8H	2-18	0K	B60-13	B0	205-15 C
8J	2-19	0L	245/60 R 14	C0	215-14 C
8K	2-19 R	0M	255/60 R 15	D0	215-15 C
8L	2-19¾	0N	2¾-15	E0	225-14 C
8M	2-22	0P	2.50-20	F0	225-15 C

**TABLE 3. TIRE SIZE CODES—Continued**

Tire Size Code	Tire Size Designation <sup>1</sup>	Tire Size Code	Tire Size Designation <sup>1</sup>	Tire Size Code	Tire Size Designation <sup>1</sup>
H0	225-16 C	BR	LR60-15	VR	13/80-24
J0	235-14 C	CR	ER60-15	WR	175-16 C
K0	235-15 C	DR	D60-13	XR	195-16 C
L0	235-16 C	ER	C60-13	YR	BR70-13
M0	21-400 C	FR	D60-14	1R	185-15 LT
N0	3.50-20	HR	175/70 R 14	2R	13-22.5 ML
P0	3.75-15	JR	MN90-18	3R	MR70-15
T0	3.60-18	KR	MR90-18	4R	E60-26.5
U0	3.00-10 C	LR	4.25-19	5R	6.7-12
V0	4.00-10 C	MR	230-15	6R	5.4-14
W0	4.00-8 C	NR	5.4-10	7R	7.4-14
X0	4.50-8 C	PR	ER60-13	SR	5.4-16
Y0	265/60 R 14	TR	FR60-14	9R	4.60-18
AR	215/60 R 15	UR	C60C-15		

**36 F.R. 7539  
April 21, 1971**

## PREAMBLE TO PART 575—CONSUMER INFORMATION

### Action on Petitions for Reconsideration—Amendment

Regulations requiring manufacturers of passenger cars and motorcycles to provide information on vehicle stopping distance (§ 375.101), tire reserve load (§ 375.102), and acceleration and passing ability (§ 375.106) were issued by the Federal Highway Administrator and published in the *Federal Register* on January 25, 1969 (34 F.R. 1246). Several petitions for reconsideration of these regulations were received. In response to these petitions, and in order to clarify and simplify the requirements and the information to be provided to purchasers, these regulations are hereby amended and reissued in the form set forth below.

§ 375.101 *Vehicle stopping distance.* This section required that manufacturers state the tire size, type and size of brakes, method of brake actuation and auxiliary brake equipment, and maximum loaded and lightly loaded vehicle weights. The effect of stating these requirements was to greatly restrict the grouping of vehicles and options that was permitted for the purposes of furnishing information. It has been determined that in order to reduce the required number of different information documents, manufacturers should be permitted to group vehicles at their discretion, as long as each vehicle in the group can meet or exceed the performance levels indicated, and the vehicles in each group are identified in the terms by which they are normally described to the public. The requirement for specific descriptive information is therefore deleted.

Since the information must be valid for all vehicles in the group to which it applies, the requirement that it refer to the smallest tire size offered has been found unnecessary, and deleted. It has also been determined that variations in stopping distances between different vehicles at 30 mph are not as meaningful for comparison

purposes as those at 60 mph, and therefore information is required only for the latter speed.

It should be noted that the regulations establish the conditions under which the performance level represented by the information provided can be met or exceeded by every vehicle to which the information applies. They do not establish the procedures by which manufacturers should generate the information, although those procedures are to be inferred from the regulations. For example, both sections contain the condition that wind velocity is zero. This does not mean that manufacturers' tests must be conducted under still air conditions; it means that the performance level established must be attainable by all vehicles in the group under those conditions. One obvious method of satisfying the condition from the manufacturer's standpoint is to conduct verification tests under adverse wind conditions (tailwind for braking, headwind for acceleration). As another example, the condition that ambient temperature be between 32°F and 100°F means that the information presented must be attainable by all vehicles in the group at all temperatures within that range (when other conditions are as stated).

The amended section requires that stopping distances be those attainable without lock-up on any wheel. This condition is the most meaningful from a safety standpoint, since steering control tends to be lost when wheels are locked. Several petitioners submitted data showing minimal differences in maximum and lightly loaded vehicle weight stopping distances to support their request for substitution of a single test weight. Their results, however, were apparently derived from tests conducted with locked wheels, under which conditions stopping distance becomes a function largely of vehicle velocity and the friction coefficient between the tire and the

road, and has no relationship to vehicle weight. It is believed that the condition of no wheel lock-up will result in data showing meaningful differences in stopping distances test weights. Accordingly, the requirement of information covering these two vehicle weight conditions is retained, and petitions on this point are denied.

The section as issued required performance information for a partially failed service brake subsystem ("emergency brake system") only at maximum loaded vehicle weight. It has been determined that in some cases the most adverse condition may occur at lighter loads. The amended rule therefore requires information for "the most adverse combination of maximum or lightly loaded vehicle weight and complete loss of braking in one or the other of the vehicle brake subsystems."

Several petitioners suggested that information be limited to one test weight, instead of requiring it for both lightly loaded and maximum loaded vehicle weight. It has been determined, however, that information on both conditions may reveal vehicles having superior brake balance, and the advantage of anti-skid or load proportioning devices, and also aid purchasers who travel mainly in one or the other of the loading conditions. The petitions to that effect are therefore denied.

**§ 375.102 *Tire reverse load.*** The section required that manufacturers state the number of passengers and the cargo and luggage weight for two different loading conditions, and the actual vehicle weight within a range of no more than 100 pounds under those conditions. These requirements restricted the grouping of vehicles and options that was permitted for the purposes of furnishing information. It has been determined that in order to reduce the required number of different information documents, manufacturers should be permitted to group vehicles by recommended tire size designations regardless of weight, as long as the reserve load figure is met or exceeded by every vehicle in the group. The requirements for providing weight and loading information are therefore deleted.

Section 375.102 as issued required that reverse load figures be provided for the vehicle at normal vehicle weight (2 or 3 persons and no luggage) as well as maximum loaded vehicle weight. It also required the furnishing of a "tire over-

load percentage", the percentage difference between the load rating of a tire at recommended inflation pressures for normal vehicle weight and the load on the tire at maximum loaded vehicle weight. Several petitions suggested that the providing of these various percentage figures would tend to confuse persons to whom the information is furnished, and therefore decrease its usefulness to the consumer. Representatives of consumer groups have also suggested, in earlier proceedings concerning the consumer information regulations, that for maximum usability the information should be as simple and clear as possible. In light of these considerations, it has been determined that the tire reserve load figure provided should be limited to a single percentage for each recommended tire size designation, at maximum loaded vehicle weight and the manufacturer's recommended inflation pressure. The requirements for tire reserve load at normal vehicle weight and for tire overload percentage accordingly are deleted.

Two further changes in the calculation methods have been made for simplicity and clarity. Instead of using the actual load on each wheel as the basis for calculation, the wheel load figure is changed to one-half of each axle's share of the maximum loaded vehicle weight. This reflects the method used in Standard No. 110 for determining the vehicle maximum load on the tire. Also, the denominator of the fraction representing the tire reserve load percentage is changed from the load on the wheel to the load rating of the tire. A tire with a load rating of 1500 pounds, for example, used with a wheel load of 900 pounds, would have a reserve load percentage of 40% ( $600/1500 \times 100$ ) rather than 66⅔% ( $600/900 \times 100$ ). The former figure has been determined to be somewhat more meaningful in cases of large reserve loads.

**§ 375.106 *Acceleration and passing ability.*** The section as issued required that times be provided for acceleration from 20 to 35 mph and from 50 to 80 mph, and times and distances for prescribed passing maneuvers involving two lane changes. On the basis of petitions submitted, and further consideration of the need for simplicity and clarity in the information presented, it has been determined that the most useful information would be in the form of passing dis-

tances and times for a simple straight-line passing maneuver at low and high speeds. In order to eliminate the difficulties of conducting a uniform passing maneuver involving a long pace vehicle and a limiting of the passing speed precisely to a specified level, the information required is to be derived on the basis of a time-distance plot of vehicle performance at maximum acceleration from 20 to 35 and 50 to 80 miles per hour.

For reasons discussed above in regard to section 375.101, the requirement of providing the weight of the vehicle is deleted from this section.

Because the amended section does not require information relating to an actual passing maneuver, but only that based on two straight-line acceleration maneuvers with a simple graphic computation, the exception of manufacturers of 500 or fewer vehicles annually from certain of the requirements is removed from this section.

Several petitioners contended that the requirement that information be provided under the condition of full-power operation of a vehicle air conditioner would lead to variable, non-repeatable results. This may be true of the results achieved in manufacturers' tests. The information presented is not, however, to be simply the results of manufacturers' tests, but rather a minimum level of performance that can be met or exceeded by every vehicle to which the information applies. Manufacturers are free, therefore, to adjust the data to account for any variation in results that might be encountered. The degradation of acceleration ability by the use of an air conditioner may be significant in some cases, and therefore it is important from the standpoint of safety that it be reflected in the information provided. The petitions to the contrary are accordingly denied.

Some petitioners objected to the required use of a correction factor to ambient conditions in accordance with SAE Standard J816a, pointing out that the factor was designed to be applicable exclusively to engine dynamometer testing and not to road testing of vehicles. The contention has

been found to have merit. In the section as amended, ranges of ambient conditions of temperature, dry barometric pressure, and relative humidity are provided, and the information is required to be valid at all points within those ranges.

In addition to the above, a new paragraph (c), containing specific definitions, is added to section 375.2, Definitions.

In order to allow adequate time for manufacturers to prepare the information, the three sections are effective for vehicles manufactured on or after January 1, 1970.

In consideration of the above, 49 CFR §§ 375.101, 375.102, and 375.106 are amended, and a new paragraph (c) is added to § 375.2, to read as set forth below. This notice of action on petitions for reconsideration is issued under the authority of sections 112 and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1401, 1407) and the delegation of authority by the Secretary of Transportation to the Federal Highway Administrator, 49 CFR 1.4(c).

Issued: May 19, 1969.

F. C. Turner

Federal Highway Administrator

#### SUBPART A—GENERAL

##### Sec.

- 375.1 Scope.
- 375.2 Definitions.
- 375.3 Matter Incorporated by reference.
- 375.4 Applicability.
- 375.5 Separability.
- 375.6 Requirements.

#### SUBPART B—CONSUMER INFORMATION ITEMS

- 375.101 Vehicle Stopping Distance.
- 375.102 Tire reserve load.
- 375.103 Reserved.
- 375.104 Reserved.
- 375.105 Reserved.
- 365.106 Acceleration and passing ability.

May 23, 1969

34 F.R. 8112



**PREAMBLE TO AMENDMENT TO PART 575—CONSUMER INFORMATION**

Amended regulations concerning the furnishing of consumer information for motor vehicles, 49 CFR §§ 375.101, 102, 106, were published in the *Federal Register* of May 23, 1969 (34 F.R. 8112). Sections 375.101, *Vehicle Stopping Distance*, and 375.106, *Acceleration and Passing Ability*, in subsections (d)(7) and (d)(1)(vii) respectively, specified that the information provided shall be valid for road surfaces with a skid number of 70, as measured in accordance with American Society for Testing and Materials Method E-274 at 40 miles per hour, omitting water delivery as specified in paragraph 7.1 of that Method.

Several petitions for reconsideration have been received, requesting that the skid number condition be set at higher level because there are only a limited number of test tracks presently with surfaces of that low a skid number. It is recognized that the level of 70 may be somewhat lower than many existing test track and road surfaces. It has been determined, in light of the petitions received, that the skid number condition can be set at a somewhat higher level without detracting from the value of the information provided or the enforceability of the regulations. Accordingly, the figure "70" in sections 375.101(d)(7) and 375.106(d)(1)(vii) is hereby changed to "75".

One petitioner requested a delay in the effective date of the regulation because of difficulties in obtaining equipment for the measurement of skid number. In light of the relaxation of the skid number requirement embodied in this notice, and the possibility of temporarily leasing either measuring equipment or test facilities, evidenced by fact that only one such request was received, the request for a delay in effective date is denied.

Since this amendment relaxes a requirement and imposes no additional burden on any person, notice and opportunity for comment thereon are unnecessary and the amendment is incorporated into the above-referenced regulations without change in the effective date. This notice of amendment in response to petitioners for reconsideration is issued under the authority of sections 112 and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1402, 1407) and the delegation of authority by the Secretary of Transportation to the Federal Highway Administrator, 49 CFR § 1.4(c).

Issued on July 14, 1969.

F. C. Turner  
Federal Highway Administrator

**34 F.R. 11974**  
**July 16, 1969**



## PREAMBLE TO AMENDMENT TO PART 575—CONSUMER INFORMATION

Regulations requiring manufacturers of motor vehicles to provide information to consumers concerning performance characteristics of their vehicles were published on January 25, 1969 (34 F.R. 1246), and amended on May 23, 1969 (34 F.R. 8112). By notice of July 11, 1969 (34 F.R. 11501) it was proposed that the regulations be amended to require manufacturers to provide the information to prospective purchasers, as well as those who have already bought a vehicle, and also to provide the information to the Administrator 30 days before the information is required to be provided to purchasers.

No general objections to the proposed amendment were received. One manufacturer objected to the requirement of providing copies to the Administrator 30 days in advance, on the basis that this did not allow sufficient lead time from the date of the proposal. In light of the fact that the information required to be provided consists only of performance figures that the manufacturer is certain can be exceeded by its vehicles, that the information must be provided in large quantities to dealers by January 1, 1970, and that no other manufacturers evidenced difficulty in meeting the December 1 date, the objection is found not to be meritorious.

The Automobile Manufacturers Association made two suggestions for changes to the regulation, both of which have been accepted and incorporated into the regulation. One change adds language to make it clear that the locations at which the information is to be provided are outlets with which the manufacturer has some legal connection. The other is that the date on which information relating to newly introduced vehicles

is required is the "announcement date", on which dealers are authorized to display and sell the vehicles.

The proposal stated that three copies should be submitted to the Administrator by December 1, 1969. It has been determined that in light of the need for immediate processing and the large amount of information that will be received at that time, a somewhat larger number of copies will be needed. The number of copies has been changed, accordingly, from three to ten. Since the additional burden on automotive manufacturers of providing these copies appears to be insubstantial, a further notice of proposed rule-making is found to be unnecessary. Other minor changes in wording are made for clarity.

*Effective Dates:* Subsections (a) and (b) of § 375.6, Requirements, are effective January 1, 1970. Subsection (c) of that section is effective December 1, 1969.

In light of the foregoing, Subpart A—General, of 49 CFR Part 375 is amended to read as set forth below. This amendment is issued under the authority of sections 112 and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1401, 1407), and the delegation of authority from the Secretary of Transportation to the Federal Highway Administration, 49 CFR § 1.4(c).

Issued on October 16, 1969.

E. H. Holmes, Acting  
Federal Highway Administrator

34 F.R. 17108  
October 22, 1969



## PREAMBLE TO AMENDMENT TO PART 575—CONSUMER INFORMATION

### Motorcycle Brake Burnishing Requirement

On May 23, 1969, the Federal Highway Administration published 49 CFR § 375.101, Vehicle Stopping Distance, of the Consumer Information Regulations (34 F.R. 8112). Paragraph (e)-(1)(ii) of that section, describing the burnishing procedures for motorcycles, is as follows: "Same as for passenger cars, except substitute 30 m.p.h. for 40 m.p.h. and 150° F. for 250° F., and maintain hand lever force to foot lever force ratio of approximately 1 to 2."

A manufacturer has stated that such a burnishing procedure, which was drawn from a draft SAE Recommended Practice, would be inappropriate for its vehicles, and suggests that the required burnishing procedures should be that recommended by the manufacturer. Since it appears that a uniform burnishing procedure suitable for all motorcycles has not yet been developed, the suggestion is found to have merit, to the extent that manufacturers have recommended such procedures. A general burnishing procedure must still be specified, however, for the purpose of determining compliance of those vehicles for which the manufacturers have not made a procedure publicly available. Accordingly, subparagraph (e)(1)(ii) of section 375.101 is hereby amended to read as follows:

*"Motorcycles.* Adjust and burnish brakes in accordance with manufacturer's recommendations. Where no burnishing procedures have been recommended by the manufacturer, follow the procedure specified above for passenger cars, except substitute 30 m.p.h. for 40 m.p.h. and 150° F. and 250° F., and maintain hand lever force to foot lever force ratio of approximately 1 to 2."

The Consumer Information regulations require manufacturers to submit information to the

FHWA by December 2, 1969, and it is important, therefore, that this amendment to the regulations be made effective without delay. The regulations require only that the manufacturers submit information to purchasers (and to the FHWA) as to performance levels that can be met or exceeded by their vehicles, and it is not necessary that vehicles be retested as long as they perform as well under the manufacturers' own burnishing procedures as under the previously specified ones. Manufacturers are, of course, free to provide new performance figures at any time, under the procedures specified in Part 375. If in a particular case a manufacturer determines that its vehicles may not be able to meet the performance figures provided when its own recommended burnishing procedures are utilized, and is not able to provide new and appropriate figures within the time specified, it should include a notation to that effect at the time that the figures are first provided to the FHWA. The vehicles in question will not be considered to be in violation of the regulations if they meet the performance figures provided under the previously specified burnishing procedures, and if new and corrected figures are provided under section 375.101, as amended, not later than September 1, 1970.

Because of the importance of providing to consumers by January 1, 1970, the probability that few if any manufacturers will be adversely affected by the amendment, and the provisions for relief included herein, notice and public procedure thereon are found to be impracticable, unnecessary, and contrary to the public interest, and the amendment described above is made effective on publication in the *Federal Register*.

Effective: November 26, 1969

This amendment is issued under the authority of sections 112 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1401, 1407), and the delegation of authority from the Secretary of Transportation to the Federal Highway Administrator, 49 CFR § 1.4(c).

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Issued on November 24, 1969.

F. C. Turner  
Federal Highway Administrator

**34 F.R. 18865**  
**November 26, 1969**

**PREAMBLE TO AMENDMENT TO PART 575—CONSUMER INFORMATION**  
**(Availability Requirements)**

The purpose of this notice is to amend section 575.6 of the Consumer Information Regulations (49 CFR Part 575) to require that the information supplied pursuant to Subpart B of the Regulations be provided in sufficient quantity to permit retention by prospective customers or mailing to them upon request. A notice of proposed rulemaking was published on January 14, 1971 (36 F.R. 557), proposing to carry out the legislative mandate of P.L. 91-625 (84 Stat. 262). That legislation was designed to remedy difficulties resulting from the current practice of making consumer information available only in the showroom, by permitting the Secretary to require that the information be provided in a printed format which could be retained by customers who visit the showroom or mailed to others upon their request.

A limited number of comments were received in response to the Notice, some of which merely expressed support for the additional requirement. The Chrysler Corporation requested that the amendment be clarified to provide that temporary unavailability would not constitute a failure to comply with the regulations. As is noted in the Notice of proposed rulemaking, the uncertainty of demand makes it difficult to establish precise standards as to what is "sufficient." It has been determined, therefore, that any further specification of this provision would be inappropriate at this time. It is intended that

manufacturers and dealers will cooperate to take all reasonable steps to ensure that a continuous supply of the information is available.

The Chrysler Corporation further requested that the regulation clearly indicate that a reasonable charge can be made for the materials. The legislative history of P.L. 91-625 indicates that a major purpose of the amendment was to make consumer information more easily available to consumers in making their purchase. A charge for consumer information on several makes and models of vehicles could present the car shopper with as great an obstacle to availability of information as is the case with the present system. In view of this purpose and the general aim of the consumer information regulations to provide for as wide a dissemination of information as possible, it has been determined that the retention copies should be provided without charge.

In consideration of the above, 49 CFR 575.6(b) is amended. . . .

*Effective date:* January 1, 1972.

Issued on September 28, 1971.

Douglas W. Toms  
Administrator

**36 F.R. 19310**  
**October 2, 1971**



## PREAMBLE TO AMENDMENT TO PART 575—CONSUMER INFORMATION

### (Truck-Camper Loading)

(Docket No. 71-7; Notice 5)

This notice reissues the portion of 49 CFR § 571.126, Motor Vehicle Safety Standard No. 126, *Trucker-Camper Loading*, that was previously applicable to truck manufacturers as a consumer information regulation, 49 CFR § 575.103, *Truck-Camper Loading*. It also responds to petitions for reconsideration of Standard No. 126 on issues that are not addressed in Notice 4, which is published in this issue (37 F.R. 26605).

Petitions for reconsideration of Standard No. 126 (37 F.R. 16497) were filed by Chrysler Corporation (Chrysler), Ford Motor Company (Ford), General Motors Corporation (GM), Jeep Corporation (Jeep), Motor Vehicle Manufacturers Association (MVMA) Recreational Vehicle Institute, Inc. (RVI) and Toyota Motor Sales USA, Inc. (Toyota).

In response to information contained in some of the petitions, the portions of the standard previously applicable to truck manufacturers are being reissued under this notice as a consumer information regulation for the reasons stated in Notice 4. Minor amendments are also made to the regulation on the basis of some of the petitions while the Administrator has declined to grant requested relief from other requirements of the regulation.

1. *Effective date.* GM has petitioned for a delayed effective date. As a truck manufacturer, GM feels that additional lead time is required "to develop, process, and print the necessary information on an orderly basis." The Administration has found for good cause shown that an effective date earlier than 180 days after issuance of Standard No. 126 was in the public interest; however, to allow truck manufacturers sufficient time for testing to determine cargo

center of gravity locations the effective date of the requirements applicable to truck manufacturers is being extended 2 months, until March 1, 1973.

2. *Definitions and information.* As discussed in Notice 4 Ford objected to the definition of "cargo weight rating" and the term "total load". Standard No. 126 has been amended to meet Ford's objections, and similar changes are made in the terminology of the new truck consumer information regulation.

Ford also suggests that the phrase "any additional weight carried in or on the camper" should be substituted for "the weight of camper cargo, and the weight of passengers in the camper" in paragraph S5.2.1(d) of Standard No. 126, now § 575.103(e)(3). It believes the suggested language would be more meaningful to the average user and that the present language could be construed as endorsing the carrying of passengers in campers. Ford's request is denied. The NHTSA considers that the specificity of references to cargo and passengers is more meaningful to consumers than the general reference to "any additional weight". Further, given the prevalence of carrying passengers in campers, the NHTSA does not believe that the present language can realistically be considered to have a significant effect on this practice.

Both Ford and GM objected to the paragraph requiring the manufacturer to furnish trailer towing recommendations, on the grounds of vagueness and lack of prior notice and opportunity to comment. The NHTSA concurs, and is deleting this requirement.

Ford suggests that paragraph S5.2.1(a) of Standard No. 126 (now § 575.103(e)(1) should be revised to make clear that the slide-in camper

also has a center of gravity designation determined in accordance with the regulation, which falls within the boundaries specified by the vehicle manufacturer. Since campers manufactured before the effective date of the regulation may be mounted on trucks manufactured after March 1, 1973, Ford's suggestion has not been adopted.

GM has petitioned that a warning be required to accompany the regulation's information, stating that the longitudinal center of gravity is only one of the many factors affecting the overall performance of a vehicle and that other factors concerning vehicle handling should be considered by the operator. The NHTSA denies GM's petition on this point. Proper loading and load distribution in truck-camper combinations is a highly significant handling factor, and such a warning might cause a truck operator to feel the loading information presented is of little significance. The regulation does not, however, prohibit GM or other manufacturers from furnishing such additional warnings if they see fit.

GM has also asked for a confirmation of its assumption that "the pictorial representation of

the recommended longitudinal center of gravity zone for the cargo weight rating need not be to scale but can be generalized so long as the longitudinal boundaries of the zone are clearly set forth." The NHSTA agrees with this interpretation.

*Effective Date:* March 1, 1973.

In consideration of the foregoing, 49 CFR Part 575 is amended by adding a new § 575.103, *Truck-camper Loading*. . . .

This notice is issued pursuant to the authority of sections 112 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 USC 1401, 1407) and the delegation of authority at 49 CFR 1.51.

Issued on December 6, 1972.

Douglas W. Toms  
Administrator

**37 F.R. 26607**  
**December 14, 1972**

## PREAMBLE TO AMENDMENT TO PART 575—CONSUMER INFORMATION

### Truck-Camper Loading

(Docket No. 71-7; Notice 6)

This notice responds to petitions for reconsideration of 49 CFR § 575.103, *Truck-camper loading*, with amendments extending the effective date to April 1, 1973, and allowing optional wording of certain statements until October 1, 1973.

On December 14, 1972, Part 575 of Title 49, Code of Federal Regulations, was amended by adding § 575.103 *Truck-camper loading* (37 F.R. 26607). The amendment was in essence that portion of Federal Motor Vehicle Safety Standard No. 126, *Truck-camper loading* that applied to manufacturers of trucks accommodating slide-in campers, as originally published on August 15, 1972 (37 F.R. 16497). Pursuant to 49 CFR § 553.35, petitions for reconsideration of § 575.103 have been filed by General Motors Corporation and International Harvester Company. Ford Motor Company has asked for a clarification.

In response to information contained in these petitions the regulation is being amended in certain respects, and a new effective date of April 1, 1973 adopted. Requested changes in other requirements of the regulation are denied.

1. *Effective date*: Both petitioners request delay of the effective date of the regulation for at least 60 days, until May 1, 1973 at the earliest. One reason for the request is that petitioners had printed their manuals on the basis of the notice of August 15, 1972, and that the additional time is needed to print new materials conforming to modified texts published on December 14, 1972. General Motors also states that the additional time is needed to prepare and disseminate data in a manner meeting the requirement that it be available to prospective purchasers. While data has been prepared for each truck, it has not yet been consolidated into a single sheet or pamphlet

suitable for showroom display and availability. The requests of both petitioners reflect the probability that the material will not be submitted to the Administrator at least 30 days before it is available to prospective purchasers, as required by § 575.6(c), and the possibility that the data will not be ready by March 1, 1973.

The NHTSA has determined that good cause has been shown for postponement of the effective date until April 1, 1973. This agency recognizes, however, that the minor textual changes made in the December notice create problems of conformity for those manufacturers who in good faith relied on the August notice in ordering materials. Accordingly, the regulation is being amended to allow the earlier wording on an optional basis until October 1, 1973. These amendments permit use of the phrase "total load" instead of "total cargo load" in paragraph (e)(3) where it twice appears, and the legend "Aft End of Cargo Area" for "Rear End of Truck Bed" in Figure 1, Truck Loading Information. The word "rating" appearing on the last line of paragraph (e)(5) is properly "ratings" as printed in the August notice, and a correction is made. Further, the NHTSA considers it important that a manufacturer fulfill the requirements of § 575.6(b) by making information available to prospective purchasers when trucks manufactured on or after April 1, 1973 are placed on sale. Considering the short lead time between December 14, 1972 and February 1, 1973 and the intervening holidays, the NHTSA will not take enforcement action with respect to the furnishing of information under §§ 575.103 and 575.6(c) prior to April 1, 1973, if manufacturers provide information to this agency as required by those sections not later than the date by which the information must be provided to prospective purchasers.

2. *Administrative Procedure Act.* Harvester believes that the Administrative Procedure Act was violated in that interested persons were not provided an opportunity to comment upon providing information under Part 575 prior to enactment of § 575.103. The NHTSA views Harvester's comment as a narrow construction of the requirements of the Act, and disagrees with petitioner's conclusion. The content of § 575.103 was proposed on April 9, 1971 (36 F.R. 6837) and adopted as a safety standard on August 15, 1972 (37 F.R. 16497). Pursuant to petitions for reconsideration from Chrysler Corporation, Ford Motor Company, General Motors, Jeep Corporation, and Motor Vehicle Manufacturers' Association that Standard No. 126 would be more appropriate as a consumer information regulation, the NHTSA adopted § 575.103 on December 14, 1972 with content virtually identical to that issued in the previous August. Thus the agency considers it has met 5 USC § 553 by providing notice of the terms and substance of the rule, and an opportunity to comment. It is true that notice was not provided on the specific issue that distinguishes the consumer information regulation from a motor vehicle safety standard (*i.e.*, availability of information to a prospective purchaser and the agency at specified time periods), but the NHTSA considers this issue a minor one in relation to the regulation as a whole for which adequate notice was given. In view of the weight of comment that the standard should properly be a consumer information regulation, no further notice was deemed necessary. The NHTSA has

already in this notice indicated its willingness to liberally interpret § 575.6(c) because of the time factor involved.

3. *Clarification.* Ford Motor Company has asked for a clarification of the term "weight of occupants" used to compute "cargo weight rating", as defined by the regulation. Specifically, Ford inquires whether the weight is that of a 95th percentile male—that of an "occupant" as defined by § 571.3(b)—or that of a person weighing 150 pounds, the figure applicable to other consumer information regulations and used in the safety standards.

The NHTSA intended "weight of occupants" to be the "normal occupant weight" figure of 150 pounds specified in Motor Vehicle Safety Standard No. 110 rather than that of a 95th percentile male, which is greater. To clarify this, the phrase, "computed as 150 pounds times the number of designated seating positions," is added to the regulation.

In consideration of the foregoing, 49 CFR § 575.103, *Truck-camper loading*, is amended . . .

Effective date: April 1, 1973.

(Sec. 112 and 119, Pub. L. 89-563; 80 Stat. 718, 15 USC 1401, and 1407; delegation of authority at 49 CFR 1.51.)

Issued on February 12, 1973.

Douglas W. Toms  
Administrator

38 F.R. 4400  
February 14, 1973

## PREAMBLE TO AMENDMENT TO PART 575—CONSUMER INFORMATION

### Subpart A—General

(Docket No. 73-5; Notice 1)

This notice amends the definition section of the regulation on Federal motor vehicle consumer information reflecting previous amendments to definitions in the Federal motor vehicle safety standards.

The definitions of "brake power unit" and "lightly loaded vehicle weight" in 49 CFR § 575.2(c) have been obsoleted by recent amendments to these terms in Motor Vehicle Safety Standard No. 105a, *Hydraulic Brake Systems* (37 F.R. 17970). "Brake power unit" has been redefined to more accurately describe the characteristics of the component concerned. The term "curb weight" used in defining "lightly loaded vehicle weight" has been replaced by "unloaded vehicle weight" (as defined in § 571.3) as a more precise description of vehicle condition. Finally, "Maximum sustained vehicle speed"

should be grammatically a speed "attainable" rather than "obtainable".

*Effective date:* February 28, 1973. Since these amendments are primarily a matter of form and have no significant effect on substantive requirements, it is found for good cause that notice and public procedure thereon is unnecessary, and an immediate effective date is in the public interest.

(Sec. 112, 119 Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1401, 1407; delegation of authority at 49 CFR 1.51.)

Issued on February 21, 1973.

Douglas W. Toms  
Administrator

**38 F.R. 5338**  
**February 28, 1973**



## PREAMBLE TO AMENDMENT TO PART 575—CONSUMER INFORMATION

### Subpart A—General (Docket 72-24; Notice 2)

This notice amends 49 CFR 575, Consumer Information, to require manufacturers to identify specially-configured vehicles not available for purchase by the general public as "special vehicles" in the information submitted to the NHTSA under § 575.6(c).

A notice of proposed rulemaking to this effect was published on November 8, 1972 (37 F.R. 23732). As noted in that proposal, inclusion of these vehicles in compilations or rankings published by this agency as consumer information serves no beneficial purpose, and could confuse the consumer.

No comments opposed the proposal. General Motors Corporation commented that the amendment should more clearly indicate that the special vehicle identification requirements only apply to the information supplied to NHTSA under § 575.6(c). The new section reflects this suggestion.

Ford Motor Company agreed with GM that the special vehicle identification is useful in information supplied to NHTSA. Ford also suggested, however, that consumer information on special vehicles need not be included at all in the

information supplied "on location" to prospective purchasers in accordance with § 575.6(b). The NHTSA does not have information at present to support or repudiate this suggestion, which is beyond the scope of the proposal. If Ford or any other person wishes to petition for rulemaking on this subject, the agency will consider it for possible future rulemaking.

In response to an implied question by Truck Body and Equipment Association, Inc., the amendment does not change the applicability of the Consumer Information regulations, as set forth in Subpart B of Part 575.

In consideration of the foregoing, 49 CFR Part 575, Consumer Information, is amended. . .

Effective date: June 11, 1973.

(Secs. 112, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1401, 1407; delegation of authority at 49 CFR 1.51.)

Issued on May 1, 1973.

James E. Wilson  
Acting Administrator

**38 F.R. 11347**  
**May 7, 1973**



## PREAMBLE TO AMENDMENT TO PART 575—CONSUMER INFORMATION

(Docket No. 25, Notice 8)

This notice establishes a Consumer Information regulation on Uniform Tire Quality Grading. The notice is based on proposals published March 7, 1973 (38 F.R. 6194), and August 14, 1973 (38 F.R. 21939). An earlier proposal, published September 21, 1971 (36 F.R. 18751) was later withdrawn (April 21, 1972; 37 F.R. 7903). Comments submitted in response to these proposals have been considered in the preparation of this notice.

The regulation will require tire manufacturers and brand name owners to provide relative grading information for 13-, 14- and 15-inch tire size designations for tire traction, treadwear, and high speed performance. The respective grades will be molded into or onto the tire sidewall, contained in a label affixed to each tire, and provided for examination by prospective purchasers in a form retainable by them at each location where tires are sold. The requirements are effective with respect to passenger cars when they are equipped with new tires bearing quality grades.

*Treadwear:* The regulation requires each tire to be graded for treadwear performance using numbers which indicate the percentage of treadwear the tire will produce when compared to the treadwear obtained from a "control tire" specified in the regulation. Each tire will be graded with either the number "60", representing treadwear performance less than 80 percent of the control tire's, or the number "80", "120", "160" or "200", representing at least that percentage of control tire wear. The grades are fewer in number and represent broader performance ranges than those proposed, as a result of comments that the proposed grades were too numerous and would not take into account inherent differences in tire performance.

The method for obtaining treadwear grades is essentially that proposed in the notice of March 7, 1973. Treadwear grades will be determined by using a convoy of up to four identical passenger cars with one vehicle equipped with four identical control tires, and each of the remaining vehicles equipped with four identical manufacturer's tires (candidate tires) having the same nominal rim diameter as the control tire. The NHTSA intends that the convoy vehicles be driven as similarly as possible with respect to such factors as steering and braking. The vehicles are run for 16,000 miles over a surface that will produce control tire wear equal to between 65 and 85 percent of original tread depth. The proposal had suggested that the tires be worn to 90 percent of tread depth. This percentage has been reduced to prevent the tires from being worn below their treadwear indicators. The proposal had further suggested that candidate tires be loaded to 100 percent of the load specified for their inflation pressure in the 1972 Tire and Rim Association Yearbook. In response to comments that vehicles are rarely loaded to that extent in practice, the load has been changed to 90 percent of the load specified for the inflation pressure in the 1972 Tire and Rim Association Yearbook. The NHTSA believes the road test method for measuring treadwear to be the most satisfactory that is presently available. Moreover, the method has been used for many years by tire manufacturers to evaluate the treadwear potential of newly developed tire designs and compounds.

Many comments agreed that a 16,000-mile road test was appropriate for grading the treadwear of radial tires. Some comments urged, however, that only a 12,000-mile test be specified for bias and bias/belted tires. The NHTSA has

not accepted this recommendation as it believes the comparative data for candidate tires of different construction types will necessarily be more accurate if the comparisons are based on the same degree of control tire wear.

Certain comments referred to the existing national energy shortage, requesting that the agency take into account the problems presented by the shortage in the final requirements. The NHTSA recognizes the degree of energy that will be necessary to perform the appropriate grading tests, particularly with respect to the test for treadwear grading. Research has been undertaken and will continue with a view to reducing the energy needs to establish treadwear performance without adversely affecting the validity of test results. The NHTSA invites suggestions or proposals in this regard, including supportive data, directed to the establishment of alternative methods or tests for grading tire treadwear.

*Traction:* Each tire will bear a traction grade of "90", "105", or "120", representing at least that percentage of control tire performance. The test for obtaining traction grades is similar to that proposed on March 7, 1973. It utilizes a two-wheeled test trailer built essentially to specifications in American Society of Testing and Materials E-274-70, *Skid Resistance of Paved Surfaces Using a Full-Scale Tire*. The test consists of towing the trailer over specified wet test surfaces, equipped first with identical control tires, and then with identical candidate tires of the same rim diameter as the control tire. The average coefficient of friction is computed when one trailer wheel is locked on each of the two surfaces at 20, 40, and 60 miles per hour. The grade, similarly to the treadwear grade, is the comparative difference between candidate and control tire performance. The final rule differs from the notice in that the proposed traction grade representing less than 90 percent of control tire performance has not been included. This results from the notice proposing to amend Motor Vehicle Safety Standard No. 109 (49 CFR 571.109) (38 F.R. 31841; November 19, 1973) to require all passenger car tires to achieve at least this level of control tire performance. The NHTSA expects that this requirement will become effective on the effective date of this

regulation, thereby necessitating the deletion of the grade. The other grades specified differ from those proposed to the extent that the range between grades has been increased to better allow for inherent gradations in actual tire performance.

Many comments urged that grading for tire traction not be established at this time. The comments argued that the current state of the art has not advanced to the point where reliable and reproducible results can be obtained using the proposed two-wheel trailer method.

The NHTSA believes the traction test issued by this notice, utilizing the two-wheeled trailer, is an objective procedure, capable of producing repeatable results, and is therefore satisfactory for the purpose of measuring and grading straight-line, wet-surface braking traction. In this regard, on the basis of information received from General Motors, that company is presently using the identical methodology in the specifications for tire traction for its "TPC" specification tire. This tire is presently manufactured by numerous domestic tire companies. Moreover, grading tire traction is a necessary adjunct, in the view of NHTSA, to grading tire treadwear, for it is commonly known that treadwear and traction performance result from diverse tire properties. The two tests, therefore, serve as a check that manufacturers will not design tires that perform well in one area at the expense of performance in the other. The minimum traction performance requirement recommended by the comments as a substitute for traction grading is insufficient, in the view of NHTSA, to serve this function alone.

Many comments stated that traction test surfaces should be defined by test surface composition and skid number, rather than by skid number alone as proposed. It was argued that without a surface specification, reversals in tire performance may occur. The NHTSA agrees that the inclusion of precise surface specifications may improve the reliability of traction test results. It has not adopted such specifications in this notice as they have not been previously proposed. However, recent developments have been made in the establishment of test surfaces by the Federal Highway Administration of the Department of Transportation. Test surfaces developed

by that agency are proposed in a notice issued concurrently with this notice (1061) for later inclusion in the regulation.

Some comments argued that the description of this grading parameter as "traction" was misleading, as the proposed test dealt only with wet braking traction and not dry pavement or cornering traction. They suggested therefore that the grading parameter be referred to as braking or stopping traction, or as "wet-surface traction." The NHTSA does not dispute that these other traction properties are important aspects of tire traction, and expects to add these performance aspects to the traction grading scheme when appropriate test procedures are developed. The NHTSA does not believe, however, that the description of the existing test as "traction" is misleading. The terminology suggested by the comments, in the view of NHTSA, would be over technical and unnecessary.

*High speed performance:* High speed performance grades of "A", "B", or "C" are required to be affixed to each tire based on its performance on the high speed laboratory test wheel which is presently used in testing for conformity to Motor Vehicle Safety Standard No. 109. The test utilized is as proposed—an extension of the Standard No. 109 high speed performance test. A tire will be graded "C" if it only passes the Standard No. 109 test. In order to achieve a grade of "B", the tire must run without failure an additional ½ hour at 425 rpm and two additional hours, one at 450 rpm and the other at 475 rpm. To achieve a grade of "A" the tire must be run without failure an additional hour at 500 rpm and another hour at 525 rpm. The NHTSA has recently revised the criteria for tire failure in Standard No. 109 (38 F.R. 27050; September 28, 1973) and the revised criteria are the criteria included in this rule.

The principal comment regarding the proposed high speed grading format was that it should consist of only two grades—one recommended for general use and the other for use by emergency vehicles. The comments argued that further grading of high speed performance was unnecessary and would promote high speed driving. The NHTSA views the suggested 2-grade scheme as rendering any high speed grade meaningless for most consumers. Essentially, it pro-

vides no information other than conformity to Standard No. 109. The NHTSA believes driving habits with respect to speed do differ among the driving population and that the grading scheme should be based on that consideration.

*Control Tires:* Both treadwear and traction grades are based on comparative results using a control tire specified in the rule. The control tires are 2-ply, rayon tires of bias construction, in sizes 6.50 x 13, 7.75 x 14, and 8.55 x 15. The control tire in each specified rim diameter will be used in testing all candidate tires having that rim diameter. The precise specifications for the tires are identical to those proposed.

Control tires will be manufactured pursuant to NHTSA contract and will be used in NHTSA compliance testing. They will be made available to the industry for testing purposes, and the NHTSA will accept, for purposes of compliance tests, results based upon their performance. The agency may consider manufacturers who use different test devices to have failed to exercise the due care contemplated by the National Traffic and Motor Vehicle Safety Act should their tires fail to perform to the specified grades when subject to agency tests.

The final rule modifies certain aspects of the proposed rule apart from the grading tests. In response to several comments, labels are not required to be affixed to the tread surface of tires which are furnished as original equipment on new vehicles. These vehicles are generally driven before sale, and labels on the tire tread surface are therefore of questionable value. Information on these tires will still be required to be otherwise furnished with the vehicle, and available for retention by prospective purchasers. The NHTSA did not, however, agree with comments recommending that the affixed label requirement be deleted entirely. Tires are frequently on display in sales outlets, and the affixed label will provide consumers with the clearest understanding of the grades applicable to a particular tire.

The grades molded onto the tire sidewall are required to be placed between the shoulder and the maximum section width, rather than between the maximum section width and the bead as proposed. The NHTSA believes the grades should apply only to the original tire, and the placement of grades above the maximum section width

increases the likelihood that grades will be removed if the tire is retreaded.

Certain comments expressed the view that providing information for tires placed on new vehicles and furnishing that information to the NHTSA 30 days before the vehicles are available to the public is difficult to accomplish because of the variety of tire and vehicle combinations involved. The NHTSA does not believe sufficient justification has been shown for deleting these requirements. While some modification may be necessary to existing manufacturer practices, the NHTSA cannot agree that the regulation presents unmanageable problems for manufacturers.

*Effective date:* September 1, 1974. The NHTSA has issued this notice pursuant to an order of the United States District Court for the

District of Columbia. That order specifies that the regulation take effect on September 1, 1974.

In light of the above, sections 575.4 and 575.6 are revised, and a new section 575.104 "Uniform Tire Quality Grading", is added in Chapter V, Title 49, Code of Federal Regulations. . . .

(Secs. 103, 112, 119, 201, 203; Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1407, 1421, 1423; delegation of authority at 49 CFR 1.51.)

Issued on December 28, 1973.

James B. Gregory  
Administrator

**39 F.R. 1037**  
**January 4, 1974**

**PREAMBLE TO AMENDMENT TO PART 575--CONSUMER INFORMATION REQUIREMENTS****(Docket No. 25; Notice 11)**

This notice revokes the Uniform Tire Quality Grading regulation published January 4, 1974 (39 F.R. 1037), and responds to petitions for reconsideration received with respect to the regulation.

The Uniform Tire Quality Grading regulation specified the use of "control tires" in the establishment of grades for treadwear and traction. The NHTSA expected that control tires would be manufactured by an industry source pursuant to NHTSA contract, and would be available for both industry and government use. A solicitation for a proposal to manufacture control tires was advertised to the domestic tire industry. Two proposals were received. Each, however, has been determined to be nonresponsive to the solicitation, which has accordingly been cancelled.

Due to the failure of NHTSA to procure a control tire, the agency must revoke the Uniform Tire Quality Grading regulation in its present form. The revocation of the regulation renders moot the petitions for reconsideration received.

On May 2, 1974, an order was entered by the United States District Court for the District of Columbia in the case of *Nash v. Brinegar* (Civil Action No. 177-73) requiring the NHTSA to issue, by June 15, 1974, a notice of proposed rulemaking for a revised Uniform Tire Quality Grading regulation having a proposed effective date of May 1, 1975.

In light of the above, § 575.104 "Uniform Tire Quality Grading" of Chapter V, Title 49, Code of Federal Regulations, is revoked, effective

(Secs. 103, 112, 119, 201, 203; Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1407, 1421, 1423; delegation of authority at 49 CFR 1.51.)

Issued on May 6, 1974.

Gene G. Mannella  
Acting Administrator

**39 F.R. 16469**  
**May 9, 1974**



## PREAMBLE TO AMENDMENT TO PART 575—CONSUMER INFORMATION

(Docket No. 74-18; Notice 2)

This notice amends Part 575, Consumer Information, so that the requirement that manufacturers have consumer information available in showrooms does not apply to special vehicles not available to the general public.

On April 26, 1974, the National Highway Traffic Safety Administration proposed to amend Part 575 to provide consumers with information for only those vehicles which they were eligible to purchase (39 F.R. 14728). The proposal, which was in response to a petition from Ford Motor Company, stated that information concerning special vehicles would continue to be made available to eligible purchasers. Comments concerning the proposal were received from American Motors Corporation, General

Motors Corporation and Chrysler Corporation. All comments favored the proposal.

In consideration of the foregoing, 49 CFR 575.7 is amended. . . .

*Effective date:* March 13, 1975. Because the amendment relieves a restriction, it is found for good cause shown that an effective date immediately upon publication is in the public interest.

(Secs. 103, 112, 114, 203, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1392, 1401, 1407, 1423; delegation of authority at 49 CFR 1.51.)

Issued on March 7, 1975.

Noel C. Bufe  
Acting Administrator

**40 F.R. 11727**  
**March 13, 1975**



## PREAMBLE TO AMENDMENT TO PART 575—CONSUMER INFORMATION

(Docket No. 25; Notice 17)

This notice establishes Uniform Tire Quality Grading Standards. The notice is based on proposals published June 14, 1974 (39 F.R. 20808, Notice 12), August 9, 1974 (39 F.R. 28644, Notice 14), and January 7, 1975 (40 F.R. 1273, Notice 15). Comments submitted in response to these proposals have been considered in the preparation of this notice.

A rule on this subject was issued on January 4, 1974 (39 F.R. 1037). It was revoked on May 9, 1974 (39 F.R. 16469), due to the inability of the NHTSA to obtain from the tire industry "control tires" which were to have been used as the basis for determining the comparative performance grades for treadwear and traction.

The rule issued today requires manufacturers to provide grading information for new passenger car tires in each of the following performance areas: treadwear, traction, and temperature resistance. The respective grades are to be molded into or onto the tire sidewall, contained in a label affixed to each tire (except for OEM tires), and provided for examination by prospective purchasers in a form retainable by them at each location where tires are sold.

### TREADWEAR

Treadwear grades are based on a tire's projected mileage (the distance which it is expected to travel before wearing down to its treadwear indicators) as tested on a single, predetermined test run of approximately 6400 miles. A tire's treadwear grade is expressed as the percentage which its projected mileage represents of a nominal 30,000 miles, rounded off to the nearest lower 10% increment. For example, a tire with a projected mileage of 24,000 would be graded "80", while one with a projected mileage of 40,000 would be graded "130".

The test course has been established by the NHTSA in the vicinity of San Angelo, Texas, as described in Appendix A. It is the same as that discussed at the public briefings on this subject which took place July 23 and July 29, 1974, except that the direction of travel has been reversed on the northwest loop to increase safety by reducing the number left turns. The course is approximately 400 miles long, and each treadwear test will require 16 circuits. It is anticipated that both the industry, at each manufacturer's option, and the agency will perform treadwear tests on this course; the former for establishing grades, and the latter for purposes of compliance testing, i.e., testing the validity of the grades assigned. To arrange for allocations of test time at the site, industry members should contact the NHTSA facility manager, P.O. Box 6591, Goodfellow Air Force Base, San Angelo, Texas 76901; telephone (915) 655-0546. While manufacturers are not required to test on the site, it would be to their advantage to do so, since the legal standard against which compliance with the rule will be measured is a tire's performance in government tests on that course.

The method of determining projected mileages is essentially that proposed in Notice 12 as modified by Notices 14 and 15 in this docket. The treadwear performance of a candidate tire is measured along with that of course monitoring tires (CMTs) if the same general construction type (bias, bias-belted, or radial) used to monitor changes in course severity. The CMTs are tires procured by the NHTSA—one group each of the three general types—which are made available by the agency for purchase and use by regulated persons at the test site. To obtain course monitoring tires, regulated persons should contact the NHTSA facility manager at the above address.

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Each test convoy consists of one car equipped with four CMTs and three or fewer other cars equipped with candidate tires of the same construction type. (Candidate tires on the same axle are identical, but front tires on a test vehicle may differ from rear tires as long as all four are of the same size designation.) After a two-circuit break-in period, the initial tread depth of each tire is determined by averaging the depth measured at six equally spaced locations in each groove. At the end of every two circuits (800 miles), each tire's tread depth is measured again in the same way, the tires are rotated, vehicle positions in the convoy are rotated, and wheel alignments are readjusted if necessary. At the end of the 16-circuit test, each tire's overall wear rate is calculated from the nine measured tread depths and their corresponding mileages-after-break-in as follows: The regression line which "best fits" these data points is determined by applying the method of least squares as described in Appendix C; the wear rate is defined as the absolute value of the slope of the regression line, in mils of tread depth per 1000 miles. This wear rate is adjusted for changes in course severity by a multiplier consisting of the base wear rate for that type of course monitoring tire divided by the measured average of the wear rates for the four CMTs in that convoy. A candidate tire's tread depth after break-in (minus 62 mils to account for wearout when the treadwear indicators are reached) divided by its adjusted wear rate and multiplied by 1000, plus 800 miles, yields its projected mileage. The projected mileage is divided by 30,000 and multiplied by 100 to determine the percentage which, when rounded off, represents the candidate tire's treadwear grade.

A discussion of the NHTSA response to the comments on treadwear grading follows.

*Duration of break-in period and test.* The 400 mile break-in period originally proposed in Notice 12 was extended in Notice 15 to 800 miles, to permit the rotation of each tire between axles after 400 miles. The Rubber Manufacturers Association (RMA) suggested that a 1600-mile break-in, by permitting each tire to be rotated

once through each position on the test car, would provide more reliable results. An analysis of variance in a study conducted by the NHTSA showed no significant variations in wear from one side of a car to the other. Further, a review of data from extensive testing on the San Angelo course showed no anomalies or consistent variations in wear rate occurring after the first 800 miles. The NHTSA is convinced that the 800-mile break-in period is sufficient to allow a tire to establish its equilibrium inflated shape and stabilize its wear rate. Therefore, the RMA suggestion has not been adopted.

Many of the comments to Notice 12 suggested that testing distances greater than 6400 miles are necessary for accurate tread life projections. Testing to 40%, 50%, and even 90% of wearout was urged. Unfortunately, only the submission of North American Dunlop was accompanied by substantive data. These data, showing non-linear wear rates, were of questionable validity because the tires were not broken in prior to testing and because the data were collected by different test fleets in different parts of the country. Nonetheless, as a result of the large number of adverse comments, the NHTSA requested further information from all knowledgeable and concerned parties to document and substantiate the position that a longer treadwear test is necessary. The additional data were requested in a written inquiry to the RMA and in Notice 15. Because of the need to limit test time, test cost, and fuel consumption, the objective was to determine the minimum test distance which can reliably predict ultimate tire treadwear life.

The responses to these requests have been reviewed and analyzed. Again, the NHTSA finds the industry data and conclusions that greater testing distances are necessary lacking in rigor and completeness. In most cases, the conditions of the industry tests were not disclosed or did not coincide with the prescribed control procedures. Serious doubt is cast upon the conclusions because of inadequate information on one or more of the following test conditions: changes in weather and season, course severity, conformity with prescribed break-in period, mileage between

readings, method of projected mileage, size of convoy, number of tires tested, and uniformity and frequency of tread depth measurement.

A controlled test program recently completed by the NHTSA was designed to test the hypothesis that the rate of wear of tires is constant after an 800-mile break-in. The design and conclusions of the test are discussed in detail in a paper by Brenner, Scheiner, and Kondo ("Uniform Tire Quality Grading; Effect of Status of Wear on Tire Wear Rate," *NHTSA Technical Note T-1014*, March, 1975—General Reference entry no. 42 in this docket.) The general conclusions of the test are: (1) that the inherent rate of wear of tires, after an 800 mile break-in period, is constant and (2) that the projected tread life for a tire estimated from a 6,400-mile test after 800-mile break-in is accurate for all three tire types. Accordingly, the 6,400 mile test period has been retained.

*Grading based on minimum performance.* The RMA expressed strong disagreement with any system in which treadwear grades are based on a tire line's *minimum* projected mileage on the San Angelo test course, urging instead that the average performance of a line is a more appropriate grade. The RMA suggested further that the proposed grading system "ignores the bell-shaped distribution curve which describes any performance characteristics and would require the downgrading of an entire line of tires until no portion of the distribution curve fell below any selected treadwear grade, notwithstanding that the large bulk of a given group of tires was well above the grade."

The NHTSA rejects the arguments and the position taken by the industry on this issue. It is precisely the fact that, in industrial processes involving production of large numbers of items, the products group themselves into the so-called bell-shaped or normal distribution which allows for measurement of central tendency and variation and forms the basis of scientific quality control.

Tests performed by the NHTSA and described in the paper cited above have shown conclusively that different production tires exhibit considerable

differences in their variability about their respective average values. Thus, two different tire brands might have identical average values for treadwear, but differ markedly in their variance or standard deviation. These differences would probably be attributable to differences in process and quality control.

Recognition of differences in inherent variability among tire manufacturers and tire lines is of the utmost importance to the consumer. The average or mean measure of a group of tires does not provide sufficient information to enable the consumer to make an informed choice. If one tire on a user's car wears out in 10,000 miles, the fact that the "average" tire of that type wears to 25,000 miles in the same driving environment does not alter his need to purchase a new tire. Ideally, the consumer might be provided with more information if he were given a measure of the mean (central tendency) and standard deviation (variability) for each tire type, but the complexity and possible confusion generated by such a system would negate its advantages. In the NHTSA's judgment, the most valuable single grade for the consumer is one corresponding to a level of performance which he can be reasonably certain is exceeded by the universe population for that tire brand and line.

As with the other consumer information regulations issued by this agency, a grade represents a minimum performance figure to which every tire is expected to conform if tested by the government under the procedures set forth in the rule. Thus, any manufacturer in doubt about the performance capabilities of a line of his tires is free to assign a lower grade than what might actually be achieved, and he is expected to ensure that substantially all the tires marked with a particular grade are capable of achieving it.

*Homogeneity of course monitoring tires.* Another aspect of the Notice 12 proposal which generated much controversy is the adoption by the NHTSA of production tires for use as course monitoring tires. The commenters suggested that changes in course severity be monitored instead by tires manufactured under rigidly specified conditions to ensure homogeneity. Because varia-

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tions in the performance of course monitoring tires are reflected in treadwear projections for all candidate tires, it follows that the more homogeneous the universe of the monitoring tires, the more precisely the performance of the candidate tires can be graded. The NHTSA is in complete accord with the industry's desire to minimize the variability of tires chosen for course monitoring. The development of specifications for special "control tires", in which materials, processing, and other conditions are rigidly controlled to a degree beyond that possible for mass production, will continue. The NHTSA hopes to work with the tire industry to reduce the variability of course monitoring tires to the maximum extent possible. However, it should be noted that an earlier version of this regulation had to be revoked due to the difficulty in obtaining such "control tires." Recent tests (summarized in the paper cited above) demonstrate that implementation of a viable treadwear grading system need not be delayed further, pending development of special tires. In these tests, the current radial CMTs—Goodyear Custom Steelgards chosen from a single, short production run—show a coefficient of variation (standard deviation of wear rate divided by mean) of 4.9%. This degree of uniformity is commensurate with universally accepted criteria for test control purposes. Hence, grading of radial tires may be started immediately. The tentatively adopted bias and bias-belted CMTs showed coefficients of variation of 7.3% and 12.4%, respectively. Existing test data indicate that the NHTSA will be able to identify and procure other tires of these two construction types, exhibiting homogeneity comparable to the current radial CMTs, in time for testing in accordance with the implementation schedule set out below. In any event, the variability of course monitoring tires will be taken into account by the NHTSA in connection with its compliance testing. At worst, the degree of grading imprecision associated with CMT variability will be no greater than one-half the levels measured for the current bias and bias-belted tire lots, because the standard deviation for the average of a set of four tires is equal to one-half that of the universe

standard deviation. It is the NHTSA's judgment that treadwear grades of this level of precision will provide substantially more meaningful information to the prospective tire buyer than is currently available.

To make efficient use of the available CMTs, the NHTSA expects to conduct treadwear tests with used CMTs, as well as with new ones. This will not affect any mileage projections, because the inherent wear rate of tires is constant after break-in. Test results will be discarded if the treadwear indicators are showing on any of the CMTs at the end of a test.

*The need for three separate course monitoring tires.* Many commenters suggested that a single CMT of the bias-ply type be used, arguing that the use of a different CMT for each general construction type would create three separate treadwear rating systems. These suggestions appear to result from a misunderstanding of the role of the course monitoring tires. They are not used as yardsticks against which candidate tires are graded. Instead, they are used to monitor changes in the severity of the test course. Experiments performed by the NHTSA (Brenner, F.C. and Kondo, A., "Elements in the Road Evaluation of Tire Wear", *Tire Science and Technology*, Vol. 1, No. 1, Feb. 1973, p. 17—General Reference entry no. 17 in this docket) show that changes in test course severity will affect tires of differing construction types to differing degrees. For example, the improvement in projected tread life from the severest to the mildest test courses in the experiments was 12% for bias tires, yet it was 91% for bias-belted tires and 140% for radial tires. In fact, a variety of factors influence course severity, each having different relative effects on the various tire types. Therefore, the use of a single course monitoring tire on courses of varying severity, or even on a given course whose severity is subject to variation due to weather and road wear, would not permit the correct adjustment of measured wear rates for environmental influences. Only with a CMT for each construction type can a single, uniform treadwear grading system be established.

*Expression of treadwear grades.* The system of treadwear grading proposed in Notice 12 specified six grades, as follows:

Grade X	(projected mileage less than 15,000)
Grade 15	(projected mileage at least 15,000)
Grade 25	( " " " " 25,000)
Grade 35	( " " " " 35,000)
Grade 45	( " " " " 45,000)
Grade 60	( " " " " 60,000)

Among the objections to this proposal was that small differences in actual treadwear in the vicinity of grade boundaries would be misrepresented as large differences because of the breadth of the predetermined categories. The NHTSA was also concerned that the broad categories could in some cases reduce the desirable competitive impact of the treadwear grading system if tires of substantially differing treadwear performance were grouped in the same grade. For these reasons, a relatively continuous grading system was proposed in Notice 15, in which tires would be graded with two digit numbers representing their minimum projected mileages in thousands of miles as determined on the San Angelo test course. The major objection to both of these proposals was that grades expressing projected mileages would lead consumers to expect every tire to yield its indicated mileage. The manufacturers were especially concerned that this would subject them to implied warranty obligations, despite the disclaimer on the label. The NHTSA remains convinced that treadwear grades which are directly related to projected mileages are the most appropriate way of expressing treadwear performance. To overcome any possible misinterpretation by consumers, the grading system established today is changed from that of Notice 15 to indicate relative performance on a percentage basis, as described above. This decision is based in part upon the fact that testing performed to date on the San Angelo course has given projected mileages that are generally higher than those the average user will obtain; i.e., it appears to be a relatively mild course.

*Wheel alignment procedure.* Test vehicle wheel alignment procedures received considerable comment. Notice 12 proposed alignment to vehicle manufacturer's specifications after vehicle loading. Notice 15 proposed that this be done before loading, and that the measurements taken after loading be used as a basis for setting alignment for the duration of the test. The majority of the commenters strongly favored a return to the original procedure. The NHTSA takes particular cognizance of the fact that those commenters who have actually tried both procedures in testing at San Angelo find the procedure of Notice 12 to be satisfactory and practicable, and that of Notice 15 to be unusable. NHTSA representatives at San Angelo have reported satisfactory operation on a variety of vehicles using the originally proposed procedure, and have not observed any uneven tire wear that would indicate alignment problems. For these reasons, the final rule prescribes alignment procedures which are identical with those proposed in Notice 12.

*Tire rotation procedure.* Several commenters objected to using the proposed "X" rotation procedure for testing radial tires. The NHTSA is aware that this procedure differs from that recommended by many groups for consumers' use. While some vehicle and tire manufacturers recommend that radial tires be rotated only fore-aft, others recommend no rotation at all and yet others are silent on the subject. The primary reason for these other methods appears to be to improve passenger comfort by reducing vibration. No data have been submitted, however, to suggest that the proposed method has any adverse or uneven effect on radial tire wear. Further, this method has the advantage, for treadwear testing, of balancing out any side-to-side or axle wear differences attributable to the vehicle or to the course. Accordingly, the proposed tire rotation method has been adopted without change.

*Choice of grooves to be measured.* Some commenters suggested that treadwear projections be calculated from measurements of the most worn grooves on candidate tires, rather than from the averages of measurements made in all grooves.

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It was argued that, because many States require replacement of passenger car tires when treadwear indicators appear in any two adjacent grooves, the proposed method of calculation would yield misleadingly high projections. Analysis of projections based on both methods (Brenner, F.C. and Kondo, A., "Patterns of Tread Wear and Estimated Tread Life," *Tire Science and Technology*, Vol. 2, No. 1, 1973—General Reference entry no. 27 in this docket) shows a high correlation between the resulting tire rankings. Because the treadwear grading system established today is based on relative performance, there is no disadvantage in adopting the proposed method. On a related issue, the E.T.R.T.O. pointed out that some grooves near the tire shoulder which are designed only for esthetic reasons exhibit practically no wear, and suggested that measurements be made only in those grooves which contain treadwear indicators. This suggestion has been adopted.

*Calculation of projected mileage.* Several methods for calculating the tire wear rates to be used in determining projected mileages were considered. Notice 12 proposed calculating the geometric mean of the wear rates measured for each 800-mile increment. This approach was rejected because the geometric mean is extremely sensitive to inaccurate readings in any single measurement. Use of the arithmetic mean of the incremental wear rates appears to be the general industry practice. Unfortunately, however, the intermediate readings have no effect on such a calculation, because the result is a function only of the initial tread depth (after break-in) and that measured 6,400 miles later. Therefore, a wear rate calculated by the industry method is extremely sensitive to errors in these two measurements. In Notice 15, the NHTSA proposed that wear rate be calculated by the least-squares regression method, as described above. This approach has the advantage of weighting all measurements and minimizing the effect of inaccurate readings, so it has been adopted.

*Differing tires on a single test vehicle.* Uniroyal and the E.T.R.T.O. argued that each test convoy vehicle should be equipped with four identical tires; the reason given was that otherwise, the performance of a candidate tire would be a function of the tires chosen by the NHTSA for use on the other axle of the test vehicle during compliance testing. The NHTSA is unaware of any data that support this position. The rule adopted today requires that all vehicles in a single convoy be equipped with tires of the same general construction type, and that all tires on a single vehicle be of the same size designation. In extensive testing at San Angelo with this procedure, none of the suggested undesirable variations has been observed.

*Differing test vehicles in a single convoy.* Several commenters suggested that the rule specify that all vehicles in a given convoy be identical, to reduce variations in projected treadlife. The NHTSA is in complete agreement with the premise that those variables which can be identified and which can affect treadwear results should be controlled as closely as is feasible. Variations in vehicle type, however, do not appear to produce significant variations in treadwear projections. Nevertheless, to minimize such variations, tires will be tested for compliance only on vehicles for which they are available as original equipment or recommended replacement options. Where practical, all vehicles in a given convoy will be of the same make. However, to test tires designed for the range of wheel sizes available, the suggested method would require a proliferation of course monitoring tires, one for each combination of wheel size and construction type. Therefore, the suggestion has not been adopted.

*Accuracy of tread depth measurements.* The RMA suggested that the interval between measurements be increased to 1,600 miles to reduce the effects of measurement error. However, if this interval were used instead of 800 miles, only five readings would be obtained in the 6,400 mile treadwear test, so errors in any one reading would result in a greater overall error. A recently completed study (Kondo, A. and Brenner,

F.C., "Report on Round-Robin Groove Depth Measuring Experiment," *NHTSA Technical Note T-1012*, March 1975—General Reference entry no. 44 in this docket) shows that variations among measurements of the same tread depth by different operators do not present a serious problem. The study found that the only significant variations in measurement results occur as a result of differences in measuring techniques between different laboratories. Since these techniques are consistent within a given laboratory, the different laboratories arrive at the same results in terms of the slope of the tread depth regression line that is the basis of the treadwear grade.

## TRACTION

Traction grades are based on a tire's traction coefficient as measured on two wet skid pads, one of asphalt and one of concrete. Because a method for producing identical skid test surfaces at different sites has not yet been developed, the NHTSA has established two skid pads, described in Appendix B, near the treadwear test course in San Angelo. These pads represent typical highway surfaces. The asphalt surface has a traction coefficient, when tested wet using the American Society for Testing and Materials (ASTM) E 501 tire, of  $0.50 \pm 0.10$ . The concrete surface was described in Notice 12 as having a traction coefficient, when similarly tested, of  $0.47 \pm 0.05$ . Due to surface polishing, this coefficient has declined and stabilized at  $0.35 \pm 0.10$ . As with the treadwear course, these pads are available for use by manufacturers as well as the agency. For allocations of test time, industry members should contact the NHTSA facility manager at the above address.

Before each candidate tire test, the traction coefficient of each surface is measured with two ASTM tires to monitor variations in the surface, using a two-wheeled test trailer built in accordance with ASTM Method E-274-70. The candidate tire's traction coefficient is similarly measured on each surface, and then adjusted by adding a fixed coefficient (0.50 for asphalt, 0.35

for concrete) and subtracting the average coefficient obtained from measurements with the two ASTM tires.

The tire industry's major objection to the proposed rule was that, with four possible grades for traction, two tires might be graded differently without a meaningful difference in their performance. The RMA suggested a scheme with two grade categories above a minimum requirement. The rule issued today, by setting two threshold levels of performance, establishes three grades: "0", for performance below the first threshold; "\*\*", for performance above the first threshold; and "\*\*\*", for performance above the second threshold. The NHTSA is convinced that the grades thus defined reflect significant differences in traction performance.

Firestone suggested that further testing may demonstrate that only one pad is necessary to give the best and most consistently repeatable results. However, the ranking of a group of tires based on their performance on one surface can differ from their ranking on another surface. In fact, one tire manufacturer suggested that an additional surface of low coefficient be included in the testing scheme for this reason. The NHTSA agrees that an additional surface may increase the utility of the traction grading system, and anticipates a proposal to implement this suggestion in the future.

The suggestion of Pirelli, that measurements be made during the period between 0.5 and 1.5 seconds after wheel lockup instead of the period between 0.2 and 1.2 seconds, has been adopted. To permit more efficient use of the skid pads, the rule specifies a test sequence which differs slightly from that originally proposed: instead of being tested repeatedly on the asphalt pad and then repeatedly on the concrete pad, each tire is run alternately over the two pads. A change in paragraph (f) (2) (i) (A) permits tires to be conditioned on the test trailer as an alternative to conditioning on a passenger car. Another change facilitates the use of trailers with instrumentation on only one side, which had been inadvertently precluded by the wording of the proposed rule.

Effective: January 1, 1976

July 1, 1976

January 1, 1977

July 1, 1977

## TEMPERATURE RESISTANCE

The major objection to the proposed high speed performance grading scheme was that it was neither necessary nor beneficial to the consumer. Several commenters pointed out that Standard No. 109 specifies testing a tire against a laboratory wheel at a speed corresponding to 85 mph, and argued that certification of a tire to this minimum requirement provides the consumer with adequate information about its performance at all expected driving speeds. They suggested that only one higher grade be established, for tires designed to be used on emergency vehicles. Some commenters indicated that, as proposed, the rule seemed to condone or even encourage the unsafe operation of motor vehicles above legal speed limits. To preclude this misinterpretation, the third tire characteristic to be graded has been renamed "temperature resistance". The grade is indicative of the running temperature of the tire. Sustained high temperature can cause the material of the tire to degenerate and reduce tire life, and excessive temperature can lead to sudden tire failure. Therefore, the distinctions provided by three grades of temperature resistance are meaningful to the consumer. Except for the name change, this aspect of quality grading has been adopted as proposed. A grade of "C" corresponds to the minimum requirements of Standard No. 109. "B" indicates completion of the 500 rpm test stage specified in paragraph (g)(9), while "A" indicates completion of the 575 rpm test range.

## PROVISION OF GRADING INFORMATION

Several commenters objected to the proposed tread label requirement, suggesting that point-of-sale material such as posters and leaflets could provide the consumer with adequate information about tire grades. For the reasons discussed in Notice 12, the NHTSA is convinced that labels affixed to the tread of the tire are the only satisfactory method of providing complete information to replacement tire purchasers. Therefore, the scheme for transmitting quality grading information to consumers, combining sidewall mold-

ing, tread labels, and point-of-sale materials, has been adopted substantially as proposed. A change in paragraph (d)(1)(ii) clarifies the respective duties of vehicle manufacturers and tire manufacturers to provide information for prospective purchasers.

Several vehicle manufacturers requested that new vehicles not be required to be equipped with graded tires until six months after the date that tires must be graded. These commenters appear to have misunderstood the scope of the quality grading standard. The NHTSA expects that tires which comply with the standard will appear on new vehicles as inventories of ungraded tires are depleted. Part 575.6 requires of the vehicle manufacturer only that he provide the specified information to purchasers and prospective purchasers when he equips a vehicle with one or more tires manufactured after the applicable effective date of this rule.

The NHTSA has determined that an Inflationary Impact Statement is not required pursuant to Executive Order 11821. Industry cost estimates and an inflation impact review are filed in public Docket No. 25. This review includes an evaluation of the expected cost of the rule.

In consideration of the foregoing, a new § 575.104, "Uniform Tire Quality Grading Standards" is added to 49 CFR Part 575. . . .

*Effective dates.* For all requirements other than the molding requirement of paragraph (d)(1)(i)(A): January 1, 1976, for radial ply tires; July 1, 1976, for bias-belted tires; January 1, 1977, for bias ply tires. For paragraph (d)(1)(i)(A): July 1, 1976, for radial ply tires; January 1, 1977, for bias-belted tires; July 1, 1977, for bias-ply tires.

(Sees. 103, 112, 119, 201, 203; Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1407, 1421, 1423); delegation of authority at 49 CFR 1.51.)

Issued on May 20, 1975.

James B. Gregory  
Administrator

40 F.R. 23073  
May 28, 1975

## PREAMBLE TO AMENDMENT TO PART 575—CONSUMER INFORMATION

(Docket No. 25; Notice 18)

This notice republishes, with minor changes, paragraphs (e) (1) (v) and (f) (2) (i) (B), Figure 2, and the appendices of § 575.104, *Uniform Tire Quality Grading Standards*, which was published May 28, 1975 (40 F.R. 23073; Notice 17).

In describing the rims on which candidate tires are to be mounted, Notice 17 inadvertently referred to the Appendix to Standard No. 110. On February 6, 1975, the definition of "test rim" in Standard No. 109 was amended and the Appendix to Standard No. 110 was deleted (Docket No. 74-25; Notice 2; effective August 5, 1975). Under the new definition, a "test rim" may be any of several widths, only one of which is equal to that listed under the words "test rim width" in Table I of the Appendix to Standard No. 109. Paragraphs (e) (1) (v) and (f) (2) (i) (B) are corrected to specify the rim mounting scheme in terms of the new definition.

As Figure 2 was published in the Federal Register, the words "DOT Quality Grades" appeared as the Figure's title. In fact, the words are a part of the text which must appear on each tread label required by paragraph (d) (1) (B), and accordingly the figure is republished with the correct title.

The treadwear test course described in Appendix A is changed so that the loops are traveled in the following order: south, east, and north-west. This change is designed to increase safety by reducing the number of left turns. The table of key points and mileages is revised to reflect

the change. Corresponding changes are made in the numbers used to designate these points in the text and in Figure 3.

To prevent the bunching of test vehicles at STOP signs and thereby increase safety, the speed to which vehicles must decelerate when abreast of the direction sign is changed in Appendix A to read "20 mph".

The reference to Figure 2 in the second paragraph of Appendix B is corrected to indicate that the asphalt skid pad is depicted in Figure 4. The shading of the skid pads is corrected to correspond to the description in the text.

The first two paragraphs of Appendix C, *Method of Least Squares*, were omitted. Those paragraphs are now inserted and the graph is designated as Figure 5.

In consideration of the foregoing, paragraphs (e) (1) (v) and (f) (2) (i) (B), Figure 2, and the appendices to § 575.104 of Title 49, Code of Federal Regulations, are republished. . . .

(Secs. 103, 112, 119, 201, 203; Pub. L. 89-563, 80 Stat. 718 (15 U.S.C. 1392, 1401, 1407, 1421, 1423); delegation of authority at 49 CFR 1.51.)

Issued on June 25, 1975.

James B. Gregory  
Administrator

**40 F.R. 28071**  
**July 3, 1975**



## PART 575—CONSUMER INFORMATION

### SUBPART A—GENERAL

#### § 575.1 Scope.

This part contains Federal Motor Vehicle Consumer Information Regulations established under section 112(d) of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1401(d)) (hereinafter "the Act").

#### § 575.2 Definitions.

(a) *Statutory definitions.* All terms used in this part that are defined in section 102 of the Act are used as defined in the Act.

(b) *Motor Vehicle Safety Standard definitions.* Unless otherwise indicated, all terms used in this part that are defined in the Motor Vehicle Safety Standards, Part 571 of this subchapter (hereinafter "The Standards"), are used as defined in the Standards without regard to the applicability of a standard in which a definition is contained.

(c) *Definitions used in this part.*

["Brake power unit" means a device installed in a brake system that provides the energy required to actuate the brakes, either directly or indirectly through an auxiliary device, with the operator action consisting only of modulating the energy application level. (38 F.R. 5338—February 28, 1973. Effective: 2/28/73)]

"Lightly loaded vehicle weight" means—

(1) [For a passenger car, unloaded vehicle weight plus 300 pounds (including driver and instrumentation), with the added weight distributed in the front seat area. (38 F.R. 5338—February 28, 1973. Effective: 2/28/73)]

(2) [For a motorcycle, unloaded vehicle weight plus 200 pounds (including driver and instrumentation), with added weight distributed on the saddle and in saddle bags or other carrier. (38 F.R. 5338—February 28, 1973. Effective: 2/28/73)]

"Maximum loaded vehicle weight" is used as defined in Standard No. 110.

"Maximum sustained vehicle speed" means that speed attainable by accelerating at maximum rate from a standing start for 1 mile.

"Skid number" means the frictional resistance measured in accordance with American Society for Testing and Materials Method E-274 at 40 miles per hour, omitting water delivery as specified in paragraph 7.1 of that Method.

#### § 575.3 Matter incorporated by reference.

The incorporation by reference provisions of § 571.5 of this subchapter applies to this part.

#### § 575.4 Application.

(a) *General.* Except as provided in paragraphs (b) through (d) of this section, each section set forth in Subpart B of this part applies according to its terms to motor vehicles and tires manufactured after the effective date indicated.

(b) *Military vehicles.* This part does not apply to motor vehicles or tires sold directly to the Armed Forces of the United States in conformity with contractual specifications.

(c) *Export.* This part does not apply to motor vehicles or tires intended solely for export and so labeled or tagged.

(d) *Import.* This part does not apply to motor vehicles or tires imported for purposes other than resale. (39 F.R. 1037—January 4, 1974. Effective: 9/1/74)]

#### § 575.5 Separability.

If any section established in this part or its application to any person or circumstances is held invalid, the remainder of the part and the application of that section to other persons or circumstances is not affected thereby.

#### § 575.6 Requirements.

(a) At the time a motor vehicle is delivered to the first purchaser for purposes other than resale, the manufacturer of that vehicle shall provide to that purchaser, in writing and in the English language, the information specified in

Subpart B of this part that is applicable to that vehicle and its tires. The document provided with a vehicle may contain more than one table, but the document must clearly and unconditionally indicate which of the tables applies to the vehicle and its tires.

*Example 1:* Manufacturer X furnishes a document containing several tables, which apply to various groups of vehicles that it produces. The document contains the following notation on its front page: "The information that applies to this vehicle is contained in Table 5." The notation satisfies the requirement.

*Example 2:* Manufacturer Y furnishes a document containing several tables as in Example 1, with the following notation on its front page: Information applies as follows:

Model P. 6-cylinder engine—Table 1.

Model P. 8-cylinder engine—Table 2.

Model Q—Table 3.

This notation does not satisfy the requirement, since it is conditioned on the model or the equipment of the vehicle with which the document is furnished, and therefore additional information is required to select the proper table.

(b) At the time a motor vehicle tire is delivered to the first purchaser for a purpose other than resale, the manufacturer of that tire, or in the case of a tire marketed under a brand name,

the brand name owner, shall provide to that purchaser the information specified in Subpart B of this part that is applicable to that tire.

(c) Each manufacturer of motor vehicles, each brand name owner of tires, and each manufacturer of tires for which there is no brand name owner shall provide for examination by prospective purchasers, at each location where its vehicles or tires are offered for sale by a person with whom the manufacturer or brand name owner has a contractual, proprietary, or other legal relationship, or by a person who has such a relationship with a distributor of the manufacturer or brand name owner concerning the vehicle or tire in question, the information specified in Subpart B of this part that is applicable to each of the vehicles or tires offered for sale at that location. The information shall be provided without charge and in sufficient quantity to be available for retention by prospective purchasers or sent by mail to a prospective purchaser upon his request. With respect to newly introduced vehicles or tires, the information shall be provided for examination by prospective purchasers not later than the day on which the manufacturer or brand name owner first authorizes those vehicles or tires to be put on general public display and sold to consumers.

(d) Each manufacturer of motor vehicles, each brand name owner of tires, and each manu-

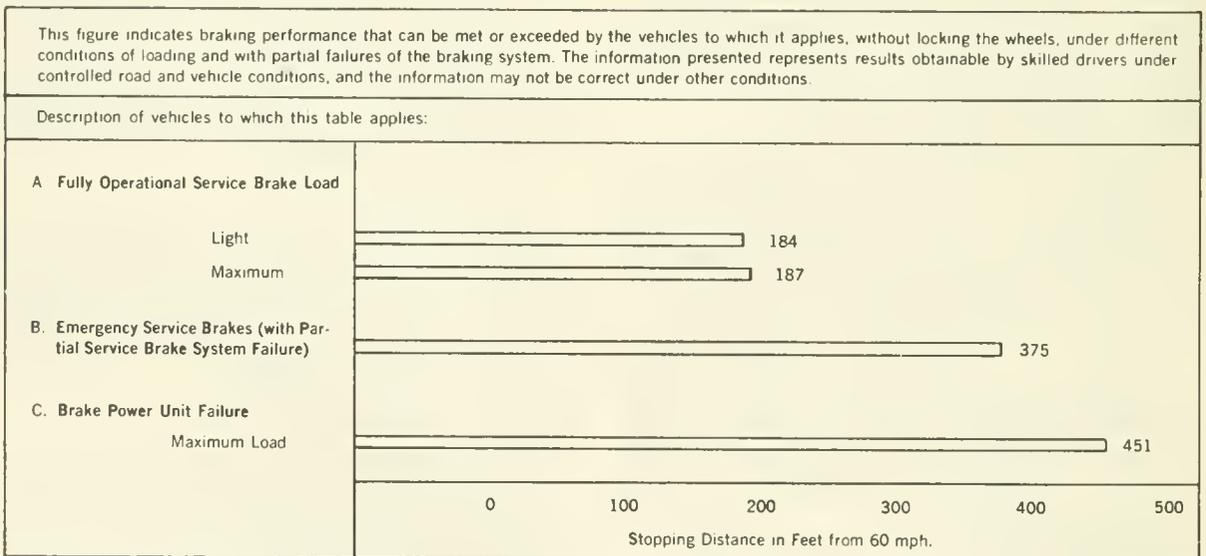


FIGURE 1

manufacturer of tires for which there is no brand name owner shall submit to the Administrator 10 copies of the information specified in Subpart B of this part that is applicable to the vehicles or tires offered for sale, at least 30 days before that information is first provided for examination by prospective purchasers pursuant to paragraph (c) of this section. (39 F.R. 1037—January 4, 1974. Effective: 9/1/74)】

#### § 575.7 Special Vehicles.

【A manufacturer who produces vehicles having a configuration not available for purchase by the general public need not make available to ineligible purchasers, pursuant to § 575.6(c), the information for those vehicles specified in Subpart B of this part, and shall identify those vehicles when furnishing the information required by § 575.6(d) (40 F.R. 11727—March 13, 1975. Effective: 3/13/75)】

### SUBPART B—CONSUMER INFORMATION ITEMS

#### § 575.101 Vehicle stopping distance.

(a) *Purpose and scope.* This section requires manufacturers of passenger cars and motorcycles to provide information on vehicle stopping distances under specified speed, brake, loading and pavement conditions.

(b) *Application.* This section applies to passenger cars and motorcycles manufactured on or after January 1, 1970.

(c) *Required information.* Each manufacturer shall furnish the information in (1) through (5) below, in the form illustrated in Figure 1, except that with respect to (2) and (3) below, a manufacturer whose total motor vehicle production does not exceed 500 annually is only required to furnish performance information for maximum loaded vehicle weight. Each vehicle in the group to which the information applies shall be capable, under the conditions specified in paragraph (d), and utilizing the procedures specified in paragraph (e), of performing at least as well as the information indicates.

If a vehicle is unable to reach the speed of 60 miles per hour (mph), the maximum sustained vehicle speed shall be substituted for the 60 mph speed in the requirements specified below, and in the presentation of information as in Figure 1,

with an asterisked notation in essentially the following form at the bottom of the figure: “The maximum speed attainable by accelerating at maximum rate from a standing start for one mile.”

The weight requirements indicated in (c) (2), (3), and (4) are modified by the fuel tank condition specified in (d) (4) below.

(1) *Vehicle description.* The group of vehicles to which the table applies, identified in the terms by which they are described to the public by the manufacturer.

(2) *Minimum stopping distance with fully operational service brake system.* The minimum stopping distance attainable, expressed in feet, from 60 mph, using the fully operational service brake system, at lightly loaded and maximum loaded vehicle weight.

(3) *Minimum stopping distance with partially failed service brake system.* (Applicable only to passenger cars with more than one service brake subsystem.) The minimum stopping distance attainable using the service brake control, expressed in feet, from 60 mph, for the most adverse combination of maximum or lightly loaded vehicle weight and complete loss of braking in any one of the vehicle brake subsystems.

(4) *Minimum stopping distance with inoperative brake power unit.* (Applicable only to vehicles equipped with brake power unit.) The minimum stopping distance, expressed in feet, from 60 mph, using the service brake system, at maximum loaded vehicle weight, with the brake power unit rendered inoperative by disconnection of its power supply, and with any residual power reserve capability of the disconnected system exhausted. If the vehicle has more than one independent unit, the figure shall represent the most adverse performance with any one of the units disconnected.

(5) *Notice.* The following notice: “This figure indicates braking performance that can be met or exceeded by the vehicles to which it applies, without locking the wheels, under different conditions of loading and with partial failures of the braking system. The information presented represents results obtainable by skilled drivers under controlled road and ve-

hicle conditions, and the information may not be correct under other conditions."

(d) *Conditions.* The data provided in the format of Figure 1 shall represent a level of performance that can be equalled or exceeded by each vehicle in the group to which the table applies, under the following conditions, utilizing the procedures set forth in (e) below:

(1) Stops are made without lock-up of any wheel, except for momentary lock-up caused by an automatic skid control device.

(2) The tire inflation pressure and other relevant component adjustments of the vehicle are made according to the manufacturer's published recommendations.

(3) For passenger cars, brake pedal force does not exceed 150 pounds for any brake application. For motorcycles, hand brake lever force applied 1¼ inches from the outer end of the lever does not exceed 55 pounds, and foot brake pedal force does not exceed 90 pounds.

(4) Fuel tank is filled to any level between 90 and 100 percent of capacity.

(5) Transmission is in neutral, or the clutch disengaged, during the entire deceleration.

(6) The vehicle begins the deceleration in the center of a straight roadway lane that is 12 feet wide, and remains in the lane throughout the deceleration.

(7) The roadway lane has a grade of zero percent, and the road surface has a skid number of 75.

(8) All vehicle openings (doors, windows, hood, trunk, convertible tops, etc.) are in the closed position except as required for instrumentation purposes.

(9) Ambient temperature is between 32°F and 100°F.

(10) Wind velocity is zero.

(e) *Procedures.*

(1) Burnish.

(i) Passenger cars. Burnish brakes once prior to first stopping distance test by conducting 200 stops from 40 mph (or maximum sustained vehicle speed if the vehicle is incapable of reaching 40 mph) at a deceleration rate of 12 fpsps in normal driving gear, with a cooling interval between stops, accomplished by driving at 40 mph for a

sufficient distance to reduce brake temperature to 250°F, or for one mile, whichever occurs first. Readjust brakes according to manufacturer's recommendations after burnishing.

(ii) Motorcycles. Adjust and burnish brakes in accordance with manufacturer's recommendations. Where no burnishing procedures have been recommended by the manufacturer, follow the procedures specified above for passenger cars, except substitute 30 m.p.h. for 40 m.p.h. and 150° F. for 250° F., and maintain hand lever force to foot lever force ratio of approximately 1 to 2.

(2) Ensure that the temperature of the hot-test service brake is between 130°F and 150°F prior to the start of all stops (other than burnishing stops), as measured by plug-type thermocouples installed according to SAE Recommended Practice JS43a, June 1966.

(3) Measure the stopping distance as specified in (c)(2), (3), and (4), from the point of application of force to the brake control to the point at which the vehicle reaches a full stop.

#### § 575.102 Tire reserve load.

(a) *Purpose and scope.* This section requires manufacturers of passenger cars to provide information as to the difference, expressed as a percentage of the tire load rating, between the load imposed on a tire at maximum loaded vehicle weight and the tire load rating set forth in Federal Motor Vehicle Safety Standard No. 109, the tire size designations recommended for use on the vehicle, and the recommended tire inflation pressures under maximum loading conditions.

(b) *Application.* This section applies to passenger cars manufactured on or after January 1, 1970.

(c) *Required information.* Each manufacturer shall furnish the information in (1) through (5) below, in the form illustrated in Figure 1. The table that is provided for a specific vehicle shall contain only information that is applicable to that vehicle. The tire reserve load percentage given for each tire size designation or combination of tire size designations shall not exceed the lowest value that is correct for all the vehicles in the group to which the table applies.

(1) *Vehicle description.* The group of vehicles to which the table applies, identified in the terms by which they are described to the public by the manufacturer.

(2) *Recommended tire size designations.* All tire size designations and combinations of tire size designations, as listed in Standard No. 109, recommended by the manufacturer for use on the vehicle.

(3) *Recommended inflation pressure for maximum loaded vehicle weight.* Vehicle manufacturer's recommended inflation pressure for maximum loaded vehicle weight, for each recommended tire size designation.

(4) *Tire reserve load percentage.* The tire reserve load percentage for the vehicle, determined according to paragraph (d), for each of the tire size designations or combinations of tire size designations recommended by the manufacturer.

(5) *Warning.* The following statement, placed in proximity to the table:

“WARNING. Failure to maintain the recommended tire inflation pressure or to increase tire pressure as recommended when operating at maximum loaded vehicle weight, or loading the vehicle beyond the capacities specified on the tire placard affixed to the vehicle, may result in unsafe operating conditions due to premature tire failure, unfavorable handling characteristics, and excessive tire wear. The tire reserve load percentage is a measure of tire capacity, not of vehicle capacity. Loading beyond the specified vehicle capacity may result in failure of other vehicle components.”

(d) *Determination of tire reserve load percentage.* The tire reserve load percentage for a vehicle, required by paragraph (c), shall be determined as follows:

This table lists the tire size designations recommended by the manufacturer for use on the vehicles to which it applies, with the recommended inflation pressure for maximum loading and the tire reserve load percentage for each of the tires listed. The tire reserve load percentage indicated is met or exceeded by each vehicle to which the table applies.

Description of Vehicles to Which this Table Applies: \_\_\_\_\_

Recommended Tire Size Designations					
Recommended Cold Inflation Pressure for Maximum Loaded Vehicle Weight	Front				
	Rear				
Tire Reserve Load Percentage*					

\*The difference, expressed as a percentage of tire load rating, between (a) the load rating of a tire at the vehicle manufacturer's recommended inflation pressure at the maximum loaded vehicle weight and (b) the load imposed upon the tire by the vehicle at that condition.

**WARNING.** Failure to maintain the recommended tire inflation pressure or to increase tire pressure as recommended when operating at maximum loaded vehicle weight, or loading the vehicle beyond the capacities specified on the tire placard affixed to the vehicle, may result in unsafe operating conditions due to premature tire failure, unfavorable handling characteristics, and excessive tire wear. The tire reserve load percentage is a measure of tire capacity, not of vehicle capacity. Loading beyond the specified vehicle capacity may result in failure of other vehicle components.

(1) Determine  $W_1$ , the vehicle maximum load on the tire, for the front and rear tires respectively. These figures are determined by distributing to each axle its share of the maximum loaded vehicle weight and dividing that share by two.

(2) Find  $W_2$ , the load rating for each tire as installed, set forth in Standard No. 109, using the vehicle manufacturer's recommended inflation pressure for maximum loaded vehicle weight.

(3) Calculate the tire reserve load percentage for each tire as:

$$\frac{W_2 - W_1}{W_2} \times 100$$

(4) The tire reserve load percentage for the vehicle is the lowest of the percentages calculated in (3) for each tire on the vehicle.

**[§ 575.103 Truck-camper loading.**

(a) *Scope.* This section requires manufacturers of trucks that are capable of accommodating slide-in campers to provide information on the cargo weight rating and the longitudinal limits within which the center of gravity for the cargo weight rating should be located.

(b) *Purpose.* The purpose of this section is to provide information that can be used to reduce overloading and improper load distribution in truck-camper combinations, in order to prevent accidents resulting from the adverse effects of these conditions on vehicle steering and braking.

(c) *Application.* This section applies to trucks that are capable of accommodating slide-in campers.

(d) *Definitions.* "Camper" means a structure designed to be mounted in the cargo area of a truck, or attached to an incomplete vehicle with motive power, for the purpose of providing shelter for persons.

["Cargo weight rating" means the value specified by the manufacturer as the cargo-carrying capacity, in pounds, of a vehicle, exclusive of the weight of occupants, computed as 150 pounds times the number of designated seating positions. (38 F.R. 4400—February 14, 1973. Effective: 4/1/73)]

"Slide-in-camper" means a camper having a roof, floor and sides, designed to be mounted on and removable from the cargo area of a truck by the user.

(e) *Requirements.* Except as provided in paragraph (f) of this section each manufacturer of a truck that is capable of accommodating a slide-in camper shall furnish the information specified in (1) through (5) below:

(1) [A picture showing the manufacturer's recommended longitudinal center of gravity

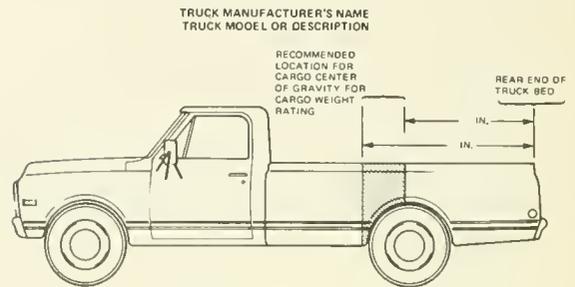


FIGURE 1 - TRUCK LOADING INFORMATION

zone for the cargo weight rating in the form illustrated in Figure 1. The boundaries of the zone shall be such that when a slide-in camper equal in weight to the truck's cargo weight rating is installed, no gross axle weight rating of the truck is exceeded. Until October 1, 1973 the phrase "Aft End of Cargo Area" may be used in Figure 1 instead of "Rear End of Truck Bed". (38 F.R. 4400—February 14, 1973. Effective: 4/1/73)]

(2) The truck's cargo weight rating.

(3) [The statements: "When the truck is used to carry a slide-in camper, the total cargo load of the truck consists of the manufacturer's camper weight figure, the weight of installed additional camper equipment not included in the manufacturer's camper weight figure, the weight of camper cargo, and the weight of passengers in the camper. The total cargo load should not exceed the truck's cargo weight rating and the camper's center of gravity should fall within the truck's recommended center of gravity zone when installed." Until October 1, 1973 the phrase "total load" may be

used instead of "total cargo load". (38 F.R. 4400—February 14, 1973. Effective: 4/1/73)]

(4) A picture showing the proper match of a truck and slide-in camper in the form illustrated in Figure 2.

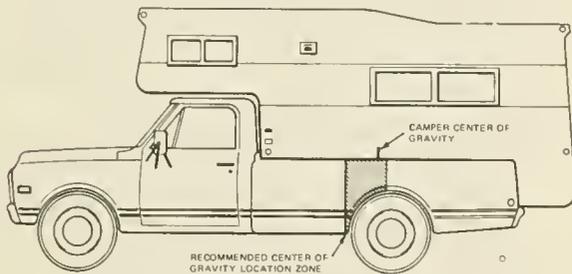


FIGURE 2 EXAMPLE OF PROPER TRUCK AND CAMPER MATCH

(5) The statements: "Secure loose items to prevent weight shifts that could affect the balance of your vehicle. When the truck camper is loaded, drive to a scale and weigh on the front and on the rear wheels separately to determine axle loads. Individual axle loads should not exceed either of the gross axle weight ratings (GAWR). The total of the axle loads should not exceed the gross vehicle weight rating (GVWR). These ratings are given on the vehicle certification label that is located on the left side of the vehicle, normally the dash, hinge pillar, door latch post, or door edge next to the driver. If weight ratings are exceeded, move or remove items to bring all weights below the ratings."

(f) If a truck would accommodate a slide-in camper but the manufacturer of the truck recommends that the truck not be used for that purpose, the information specified in paragraph (e) shall not be provided but instead the manufacturer shall provide a statement that the truck should not be used to carry a slide-in camper. (37 F.R. 26607—December 14, 1972. Effective: 3/1/73)]

#### § 575.104 Uniform Tire Quality Grading Standards

(a) *Scope.* This section requires motor vehicle and tire manufacturers and tire brand name owners to provide information indicating the relative performance of passenger car tires in the areas of treadwear, traction, and temperature resistance.

(b) *Purpose.* The purpose of this section is to aid the consumer in making an informed choice in the purchase of passenger car tires.

(c) *Application.* This section applies to new pneumatic tires for use on passenger cars manufactured after 1948. However, this section does not apply to deep tread, winter-type snow tires.

(d) *Requirements.*

(1) *Information.*

(i) Each manufacturer of tires, or in the case of tires marketed under a brand name, each brand name owner, shall provide grading information for each tire of which he is the manufacturer or brand name owner in the manner set forth in paragraphs (d)(1)(i)(A) and (d)(1)(i)(B) of this section. The grades for each tire shall be only those specified in paragraph (d)(2) of this section. Each tire shall be able to achieve the level of performance represented by each grade with which it is labeled. An individual tire need not, however, meet further requirements after having been subjected to the test for any one grade.

(A) Each tire shall be graded with the words, letters, symbols, and figures specified in paragraph (d)(2) of this section, permanently molded into or onto the tire sidewall between the tire's maximum section width and shoulder in accordance with one of the methods described in Figure 1.

(B) Each tire, except a tire sold as original equipment on a new vehicle, shall have affixed to its tread surface in a manner such that it is not easily removable a label containing its grades and other information in the form illustrated in Figure 2. The treadwear grade attributed to the tire shall be either imprinted or indelibly stamped on the label adjacent to the description of the treadwear grade. The label shall also depict all possible grades for traction and temperature resistance. The traction and temperature resistance performance grades attributed to the tire shall be indelibly circled.

(ii) In the case of information required in accordance with § 575.6(c) of this part to be furnished to prospective purchasers of motor vehicles and tires, each vehicle manufacturer and each tire manufacturer or brand name owner shall as part of that information list all possible grades for traction and temperature resistance, and restate verbatim the explanations for each performance area specified in Figure 2. The information need not be in the same format as in Figure 2, but must indicate clearly and unambiguously the grade in each performance area for:

(A) In the case of a vehicle manufacturer, each tire offered for sale on a new motor vehicle; and

(B) In the case of a tire manufacturer or brand name owner, each tire of that manufacturer or brand name owner offered for sale at the particular location.

(iii) In the case of information required in accordance with § 575.6(a) of this part to be furnished to the first purchaser of a new motor vehicle, each manufacturer of motor vehicles shall as part of that information list all possible grades for traction and temperature resistance and restate verbatim the explanation for each performance area specified in Figure 2. The information need not be in the format of Figure 2, but must clearly and unambiguously indicate the quality grades for the tires with which the vehicle is equipped.

(2) *Performance.*

(i) *Treadwear.* Each tire shall be graded for treadwear performance with the word "TREADWEAR" followed by a number of two or three digits representing the tire's grade for treadwear, expressed as a percentage of the NHTSA nominal treadwear value, when tested in accordance with the conditions and procedures specified in paragraph (e) of this section. Treadwear grades shall be multiples of 10 (*e.g.*, 80, 150).

(ii) *Traction.* Each tire shall be graded for traction performance with the word "TRACTION," followed by the symbols 0, \*, or \*\* (either asterisks or 5-pointed stars)

when the tire is tested in accordance with the conditions and procedures specified in paragraph (f) of this section.

(A) The tire shall be graded 0 when the adjusted traction coefficient is either:

(1) 0.38 or less when tested in accordance with paragraph (f)(2) on the asphalt surface specified in paragraph (f)(1)(i) of this section, or

(2) 0.26 or less when tested in accordance with paragraph (f)(2) on the concrete surface specified in paragraph (f)(1)(i) of this section.

(B) The tire may be graded \* only when its adjusted traction coefficient is both:

(1) More than 0.38 when tested in accordance with paragraph (f)(2) on the asphalt surface specified in paragraph (f)(1)(i) of this section, and

(2) More than 0.26 when tested in accordance with paragraph (f)(2) on the concrete surface specified in paragraph (f)(1)(i) of this section.

(C) The tire may be graded \*\* only when its adjusted traction coefficient is both:

(1) More than 0.47 when tested in accordance with paragraph (f)(2) on the asphalt surface specified in paragraph (f)(1)(i) of this section, and

(2) More than 0.35 when tested in accordance with paragraph (f)(2) on the concrete surface specified in paragraph (f)(1)(i) of this section.

(iii) *Temperature Resistance.* Each tire shall be graded for temperature resistance performance with the word "TEMPERATURE" followed by the letter A, B, or C, based on its performance when the tire is tested in accordance with the procedures specified in paragraph (g) of this section. A tire shall be considered to have successfully completed a test stage in accordance with this paragraph if, at the end of the test stage, it exhibits no visual evidence of tread, sidewall, ply, cord, innerliner or bead separation, chunking, broken cords, crack-

ing or open splices as defined in § 571.109 of this chapter, and the tire pressure is not less than the pressure specified in paragraph (g) (1) of this section.

(A) The tire shall be graded C if it fails to complete the 500 rpm test stage specified in paragraph (g) (9) of this section.

(B) The tire may be graded B only if it successfully completes the 500 rpm test stage specified in paragraph (g) (9) of this section.

(C) The tire may be graded A only if it successfully completes the 575 rpm test stage specified in paragraph (g) (9) of this section.

(e) *Treadwear grading conditions and procedures*

(1) *Conditions.*

(i) Tire treadwear performance is evaluated on a specific roadway course approximately 400 miles in length, which is established by the NHTSA both for its own compliance testing and for that of regulated persons. The course is designed to produce treadwear rates that are generally representative of those encountered in public use for tires of differing construction types. The course and driving procedures are described in Appendix A.

(ii) Treadwear grades are evaluated by first measuring the performance of a candidate tire on the government test course, and then correcting the projected mileage obtained to account for environmental variations on the basis of the performance of course monitoring tires of the same general construction type (bias, bias-belted, or radial) run in the same convoy. The three types of course monitoring tires are made available by the NHTSA at Goodfellow Air Force Base, San Angelo, Texas, for purchase by any persons conducting tests at the test course.

(iii) In convoy tests each vehicle in the same convoy, except for the lead vehicle, is throughout the test within human eye range of the vehicle immediately ahead of it.

(iv) A test convoy consists of no more than four passenger cars, each having only rear-wheel drive.

(v) [On each convoy vehicle, all tires are mounted on identical rims: either a "test rim" as defined with respect to that tire in paragraph S3 of Standard No. 109 (§ 571.109 of this chapter) which is of the width listed for the applicable tire size designation under the words "test rim width" in Table I of the Appendix to Standard No. 109, or such a "test rim" having a width within  $-0+0.50$  inches of the width listed. (40 F.R. 28071—July 3, 1975. Effective: 7/3/75)]

(2) *Treadwear grading procedure.*

(i) Equip a convoy with course monitoring and candidate tires of the same construction type. Place four course monitoring tires on one vehicle. On each other vehicle, place four candidate tires with identical size designations. On each axle, place tires that are identical with respect to manufacturer and line.

(ii) Inflate each candidate and each course monitoring tire to an inflation pressure 8 pounds per square inch less than its maximum permissible inflation pressure.

(ii) Load each vehicle so that the load on each course monitoring and candidate tire is 85 percent of the load specified in Appendix A of § 571.109 of this chapter (Standard No. 109) at the inflation pressure specified in paragraph (e) (2) (ii) of this section.

(iv) Adjust wheel alignment to that specified by the vehicle manufacturer.

(v) Subject candidate and course monitoring tires to "break-in" by running the tires in convoy for two circuits of the test roadway (800 miles). At the end of the first circuit, rotate each vehicle's tires by moving each front tire to the same side of the rear axle and each rear tire to the opposite side of the front axle.

(vi) After break-in, allow the tires to cool to the inflation pressure specified in paragraph (e) (2) (ii) or for two hours, whichever occurs first. Measure, to the nearest 0.001 inch, the tread depth of each candidate and course monitoring tire, avoiding tread-

wear indicators, at six equally spaced points in each groove. For each tire compute the average of the measurements. Do not include those shoulder grooves which are not provided with treadwear indicators.

(vii) Adjust wheel alignment to the manufacturer's specifications.

(viii) Drive the convoy on the test roadway for 6,400 miles. After each 800 miles:

(A) Following the procedure set out in paragraph (e)(2)(vi) of this section, allow the tires to cool and measure the average tread depth of each tire;

(B) Rotate each vehicle's tires by moving each front tire to the same side of the rear axle and each rear tire to the opposite side of the front axle.

(C) Rotate the vehicles in the convoy by moving the last vehicle to the lead position. Do not rotate driver position within the convoy.

(D) Adjust wheel alignment to the vehicle manufacturer's specifications, if necessary.

(ix) Determine the projected mileage for each candidate tire as follows:

(A) For each course monitoring and candidate tire in the convoy, using the average tread depth measurements obtained in accordance with paragraphs (e)(2)(vi) of this section and the corresponding mileages as data points, apply the method of least squares as described in Appendix C of this section to determine the estimated regression line of  $y$  on  $x$  given by the following formula:

$$y = a + \frac{bx}{1000}$$

where:

$y$ =average tread depth in mils,

$x$ =miles after break-in,

$a$ = $y$  intercept of regression line (reference tread depth) in mils, calculated using the method of least squares; and

$b$ =the slope of the regression line in mils of tread depth per 1,000 miles, calculated using the method of least

squares. This slope will be negative in value. The tire's wear rate is defined as the absolute value of the slope of the regression line.

(B) Average the wear rates of the four course monitoring tires as determined in accordance with paragraph (e)(2)(ix)(A) of this section.

(C) Determine the course severity adjustment factor by dividing the base wear rate for the course monitoring tire (see note below) by the average wear rate for the four course monitoring tires determined in accordance with paragraph (e)(2)(ix)(B) of this section.

NOTE: The base wear rates for the course monitoring tires will be furnished to the purchaser at the time of purchase.

(D) Determine the adjusted wear rate for each candidate tire by multiplying its wear rate determined in accordance with paragraph (e)(2)(ix)(A) by the course severity adjustment factor determined in accordance with paragraph (e)(2)(ix)(C) of this section.

(E) Determine the projected mileage for each candidate tire using the following formula:

$$\text{Projected mileage} = \frac{1000(a - 62)}{b'} + 800$$

where:

$a$ = $y$  intercept of regression line (reference tread depth) for the candidate tire as determined in accordance with paragraph (e)(2)(ix)(A) of this section.

$b'$ =the adjusted wear rate for the candidate tire as determined in accordance with paragraph (e)(2)(ix)(D) of this section.

(F) Compute the percentage of the NHTSA nominal treadwear value for each candidate tire using the following formula:

$$P = \frac{\text{Projected Mileage}}{30,000} \times 100$$

Round off the percentage to the nearest lower 10% increment.

(f) *Traction grading conditions and procedures.*

(1) *Conditions.*

(i) Tire traction performance is evaluated on skid pads that are established, and whose severity is monitored, by the NHTSA both for its compliance testing and for that of regulated persons. The test pavements are asphalt and concrete surfaces constructed in accordance with the specifications for pads "C" and "A" in the "Manual for the Construction and Maintenance of Skid Surfaces," National Technical Information Service No. DOT-HS-800-814. The surfaces have locked wheel traction coefficients when evaluated in accordance with paragraphs (f)(2)(i) through (f)(2)(vii) of this section of  $0.50 \pm 0.10$  for the asphalt and  $0.35 \pm 0.10$  for the concrete. The location of the skid pads is described in Appendix B.

(ii) The standard tire is the American Society for Testing and Materials (ASTM) E 501 "Standard Tire for Pavement Skid Resistance Tests."

(iii) The pavement surface is wetted in accordance with paragraph 3.5, "Pavement Wetting System," of ATSM Method E 274-70, "Skid Resistance of Paved Surfaces Using a Full-Scale Tire."

(iv) The test apparatus is a test trailer built in conformity with the specifications in paragraph 3, "Apparatus", of ASTM Method E 274-70, and instrumented in accordance with paragraph 3.3.2 of that method, except that "wheel load" in paragraph 3.2.2 and tire and rim specifications in paragraph 3.2.3 of that method are as specified in the procedures in paragraph (f)(2) of this section for standard and candidate tires.

(v) The test apparatus is calibrated in accordance with ASTM Method F 377-74, "Standard Method for Calibration of Braking Force for Testing of Pneumatic Tires" with the trailer's tires inflated to 24 psi and loaded to 1085 pounds.

(vi) Consecutive tests on the same surface are conducted not less than 30 seconds apart.

(vii) A standard tire is discarded in accordance with ASTM Method E 501.

(2) *Procedure.*

(i) Prepare two standard tires as follows:

(A) Condition the tires by running them for 200 miles on a pavement surface.

(B) **Mount each tire on a "test rim" as defined in paragraph S3 of Standard No. 109 (§ 571.109 of this chapter) which is of a width within  $-0+0.50$  inches of the width listed for the applicable tire size designation under the words "test rim width" in Table I of the Appendix to Standard No. 109. Then inflate the tire to 24 psi. (40 F.R. 28071—July 3, 1975. Effective: 7/3/75)**

(C) Statically balance each tire-rim combination.

(D) Allow each tire to cool to ambient temperature and readjust its inflation pressure to 24 psi.

(ii) Mount the tires on the test apparatus described in paragraph (f)(1)(iv) of this section and load each tire to 1085 pounds.

(iii) Tow the trailer on the asphalt test surface specified in paragraph (f)(1)(i) of this section at a speed of 40 mph, lock one trailer wheel, and record the locked-wheel traction coefficient on the tire associated with that wheel between 0.5 and 1.5 seconds after lockup.

(iv) Repeat the test on the concrete surface, locking the same wheel.

(v) Repeat the tests specified in paragraphs (f)(2)(iii) and (f)(2)(iv) for a total of 10 measurements on each test surface.

(vi) Repeat the procedures specified in (f)(2)(iii) through (f)(2)(v), locking the wheel associated with the other tire.

(vii) Average the 20 measurements taken on the asphalt surface to find the standard tire traction coefficient for the asphalt surface. Average the 20 measurements taken on the concrete surface to find the standard tire traction coefficient for the concrete surface.

(viii) Prepare two candidate tires of the same construction type, manufacturer, line, and size designation in accordance with paragraph (f) (2) (i), mount them on the test apparatus, and test one of them according to the procedures of paragraphs (f) (2) (ii) through (v) of this section, except load each tire to 85 percent of the load specified at 24 psi for the tires' size designation in Appendix A of Standard No. 109 (§ 571.109 of this chapter). Average the 10 measurements taken on the asphalt surface to find the candidate tire traction coefficient for the asphalt surface. Average the 10 measurements taken on the concrete surface to find the candidate tire traction coefficient for the concrete surface.

(ix) Compute a candidate tire's adjusted traction coefficient for asphalt ( $u_a$ ) by the following formula:

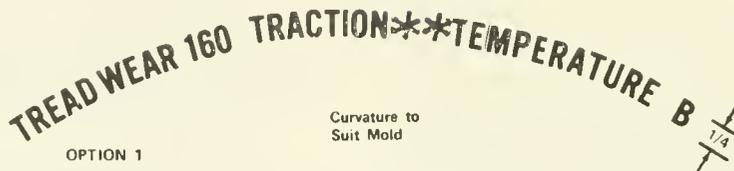
$$u_a = \text{tire coefficient for asphalt} + 0.50 \left( \frac{\text{Measured candidate tire coefficient for asphalt}}{\text{Measured standard tire coefficient for asphalt}} - 1 \right)$$

(x) Compute a candidate tire's adjusted traction coefficient for concrete ( $u_c$ ) by the following formula:

$$u_c = \text{tire coefficient for concrete} + 0.35 \left( \frac{\text{Measured candidate tire coefficient for concrete}}{\text{Measured standard tire coefficient for concrete}} - 1 \right)$$

(g) *Temperature resistance grading.*

(1) Mount the tire on any test rim as defined in S3 of Standard No. 109 (§ 571.109 of this chapter) and inflate it to 2 pounds per

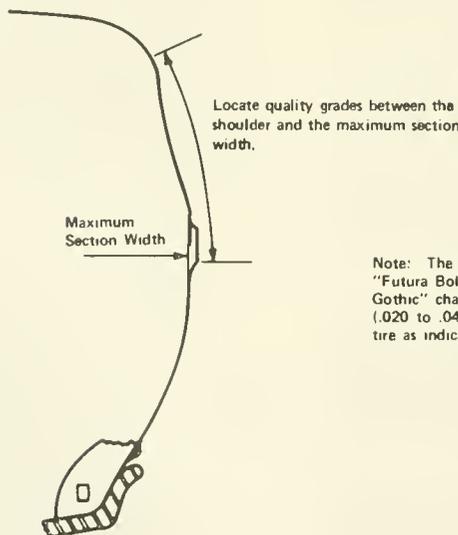


OPTION 1



SAMPLE Quality Grades

OPTION 2



Note: The quality grades shall be in "Futura Bold, Modified, Condensed or Gothic" characters permanently molded (.020 to .040 deep) into or onto the tire as indicated.

FIGURE 1

square inch less than its maximum permissible inflation pressure.

(2) Condition the tire-rim assembly at an ambient temperature of 105° for 3 hours.

(3) Adjust the pressure again to 2 pounds per square inch less than the maximum permissible inflation pressure.

(4) Mount the tire-rim assembly on an axle, and press the tire read against the surface of a flat-faced steel test wheel that is 67.23 inches in diameter and at least as wide as the section width of the tire.

(5) During the test, including the pressure measurements specified in paragraphs (g)(1) and (g)(3) of this section, maintain the temperature of the ambient air, as measured 12 inches from the edge of the rim flange at any point on the circumference on either side of the tire, at 105° F. Locate the temperature sensor so that its readings are not affected by heat radiation, drafts, variations in the tem-

perature of the surrounding air, or guards or other devices.

(6) Press the tire against the test wheel at the load specified in Appendix A of § 571.109 of this chapter (Motor Vehicle Safety Standard No. 109) for the tire's size designation and the inflation pressure that is 8 pounds per square inch less than the tire's maximum permissible inflation pressure.

(7) Rotate the test wheel at 250 rpm for 2 hours.

(8) Remove the load, allow the tire to cool to 105° F. or for 2 hours, whichever occurs last, and readjust the inflation pressure to 2 pounds per square inch less than the tire's maximum permissible inflation pressure.

(9) Reapply the load and without interruption or readjustment of inflation pressure, rotate the test wheel at 375 rpm for 30 minutes, and then at successively higher rates in 25 rpm increments, each for 30 minutes, until the tire has run at 575 rpm for 30 minutes, or to failure, whichever occurs first.

## DOT QUALITY GRADES

### ALL PASSENGER CAR TIRES MUST CONFORM TO FEDERAL SAFETY REQUIREMENTS IN ADDITION TO THESE GRADES

Treadwear	The treadwear grade is a comparative rating based on the wear rate of the tire when tested under controlled conditions on a specified government test course. For example, a tire graded 200 would wear twice as well on the government course as a tire graded 100. The relative performance of tires depends upon the actual conditions of their use, however, and may depart significantly from the norm due to variations in driving habits, service practices, and differences in road characteristics and climate.
Traction ** * 0	The traction grades are ** (the highest), *, and 0, and represent the tire's ability to stop on wet pavements as measured on asphalt and concrete test surfaces. A tire marked 0 for traction may have poor traction performance.
Temperature A B C	The temperature grades are A (the highest), B, and C, representing the tire's resistance to the generation of heat and its ability to dissipate heat. Sustained high temperature can cause the material of the tire to degenerate and reduce tire life, and excessive temperature can lead to sudden tire failure. The grade C corresponds to a level of performance which all passenger car tires must meet under the Federal motor vehicle safety standards. Grades B and A represent higher levels of performance than the minimum required by law.

FIGURE 2

## APPENDIX A

### Treadwear Test Course and Driving Procedures

#### INTRODUCTION

The test course consists of three loops of a total of 400 miles in the geographical vicinity of Goodfellow AFB, San Angelo, Texas.

The first loop runs south 143 miles through the cities of Eldorado, Sonora, and Juno, Texas, to the Camp Hudson Historical Marker, and returns by the same route.

The second loop runs east over Farm and Ranch Roads (FM) and returns to its starting point.

The third loop runs northwest to Water Valley, northeast toward Robert Lee and returns via Texas 208 to the vicinity of Goodfellow AFB.

#### ROUTE

The route is shown in Figure 3. The table identifies key points by number. These numbers are encircled in Figure 3 and in parentheses in the descriptive material that follows.

##### Southern Loop

The course begins at the intersection (1) of Ft. McKavitt Road and Paint Rock Road (FM388) at the northwest corner of Goodfellow AFB.

Drive east via FM388 to junction with Loop Road 306 (2). Turn right onto Loop Road 306 and proceed south to junction with US 277 (3). Turn onto US 277 and proceed south through Eldorado and Sonora (4), continuing on US 277 to junction with FM189 (5). Turn right onto FM189 and proceed to junction with Texas 163 (6). Turn left onto Texas 163, proceed south to Camp Hudson Historical Marker (7) and U-turn in highway. Reverse route to junction of Loop Road 306 and FM388 (2).

##### Eastern Loop

From junction of Loop Road 306 and FM388 (2) make right turn onto FM388 and drive east to junction with FM2334 (13). Turn right onto FM2334 and proceed south across FM765 (14) to junction of FM2334 and US 87 (15). Make U-turn and return to junction of FM388 and Loop Road 306 (2) by the same route.

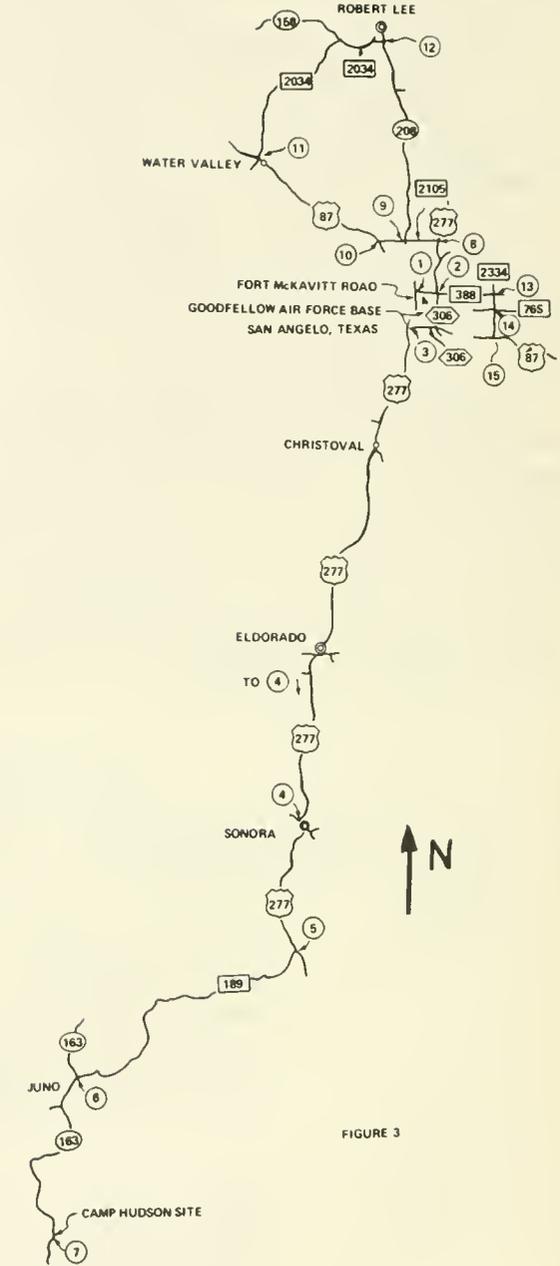


FIGURE 3

##### Northwestern Loop

From junction of Loop Road 306 and FM388 (2), make right turn onto Loop Road 306. Proceed onto US277, to junction with FM2105(8). Turn left onto FM2105 and proceed west to junction with US87 (10). Turn right on US87 and proceed northwest to the junction with FM2034 near the town of Water Valley (11). Turn right

onto FM2034 and proceed north to Texas 208 (12). Turn right onto Texas 208 and proceed south to junction with FM2105 (9). Turn left onto FM2105 and proceed east to junction with US277 (8). Turn right onto US277 and proceed south onto 306 to junction with 388 (2). Turn right onto 388 and proceed to starting point at junction of Ft. McKavitt Road and FM388 (1).

#### DRIVING INSTRUCTIONS

The drivers shall run at posted speed limits throughout the course unless an unsafe condition arises. If such condition arises, the speed should be reduced to the maximum safe operating speed.

#### BRAKING PROCEDURES AT STOP SIGNS

There are a number of intersections at which stops are required. At each of these intersections a series of signs is placed in a fixed order as follows:

##### Sign Legend

Highway Intersection 1000 (or 2000) Feet

STOP AHEAD

Junction X X X

Direction Sign (Mereta→)

STOP or YIELD

#### PROCEDURES

1. Approach each intersection at the posted speed limit.

2. When abreast of the STOP AHEAD sign, apply the brakes so that the vehicle decelerates smoothly to 20 mph when abreast of the direction sign.

3. Come to a complete stop at the STOP sign or behind any vehicle already stopped.

#### KEY POINTS ALONG TREADWEAR TEST COURSE, APPROX. MILEAGES, AND REMARKS

	<i>Mileages</i>	<i>Remarks</i>
1 Ft. McKavitt Road & FM388	0	
2 FM388 & Loop 306	3	STOP
3 Loop 306 & US277	10	
4 Sonora	72	
5 US277 & FM189	88	
6 FM189 & Texas 163	124	
7 Historical Marker (Camp Hudson)	143	U-TURN
4 Sonora	214	
3 Loop 306 & US277	276	
2 FM388 & Loop 306	283	
13 FM388 & FM2334	290	STOP
14 FM2334 & FM765	292	STOP
15 FM2334 & US87	295	STOP/U-TURN
14 FM2334 & FM765	298	STOP
13 FM388 & FM2334	300	STOP
2 FM388 & Loop 306	307	STOP
8 US277 & FM2105	313	
9 FM2105 & Texas 208	317	STOP
10 FM2105 & US87	320	STOP
11 FM2034 & US87	338	
12 FM2034 & Texas 208	362	STOP
9 FM2105 & Texas 208	387	
8 FM2105 & US277	391	YIELD
2 FM388 & Loop 306	397	
1 Ft. McKavitt Road & FM388	400	

## APPENDIX B

### Traction Skid Pads

Two skid pads have been laid on an unused runway and taxi strip on Goodfellow AFB. Their location is shown in Figure 4.

The asphalt skid pad is 600 ft. x 60 ft. and is shown in black on the runway in Figure 4. The pad is approached from either end by a 75 ft. ramp followed by 100 ft. of level pavement. This arrangement permits the skid trailers to stabilize before reaching the test area. The ap-

proaches are shown on the figure by the hash-marked area.

The concrete pad is 600 ft. x 48 ft. and is on the taxi strip. The approaches to the concrete pad are of the same design as those for the asphalt pads.

A two lane asphalt road has been built to connect the runway and taxi strip. The road is parallel to the northeast-southwest runway at a distance of 100 ft. The curves have super-elevation to permit safe exit from the runway at operating speeds.

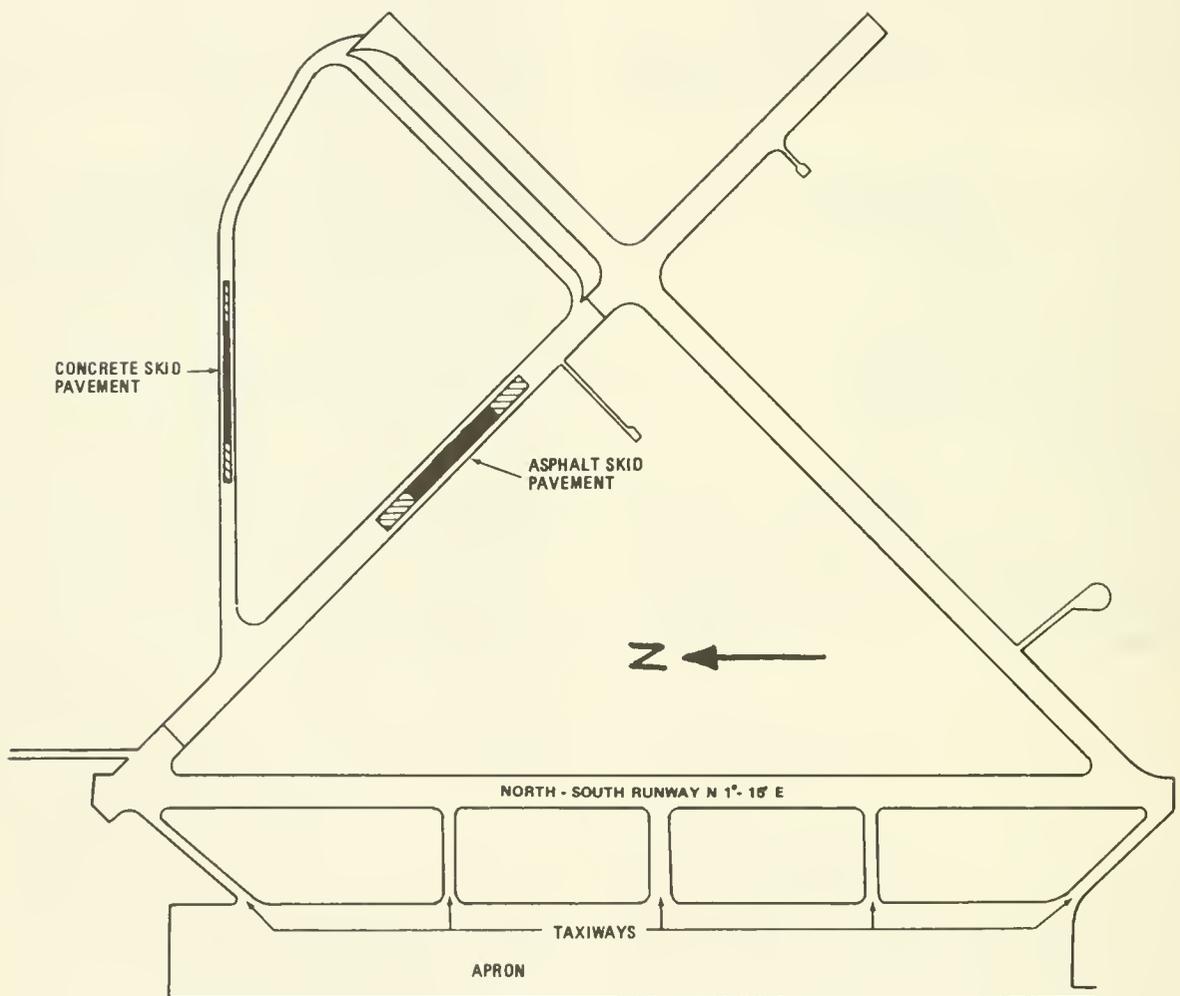


FIGURE 4

## APPENDIX C

## Method Of Least Squares

The method of least squares is a method of calculation by which it is possible to obtain a reliable estimate of a true physical relationship from a set of data which involve random error. The method may be used to establish a regression line that minimizes the sum of the squares of the deviations of the measured data points from the line. The regression line is consequently described as the line of "best fit" to the

data points. It is described in terms of its slope and its "y" intercept.

The graph in Figure 5 depicts a regression line calculated using the least squares method from data collected from a hypothetical treadwear test of 6,400 miles, with tread depth measurements made at every 800 miles.

In this graph,  $(x_j, y_j)$  [ $j=0, 1, \dots, 8$ ] are the individual data points representing the tread depth measurements (the overall average for the tire with 6 measurements in each tire groove) at the beginning of the test (after break-in and at the end of each 800-mile segment of the test.

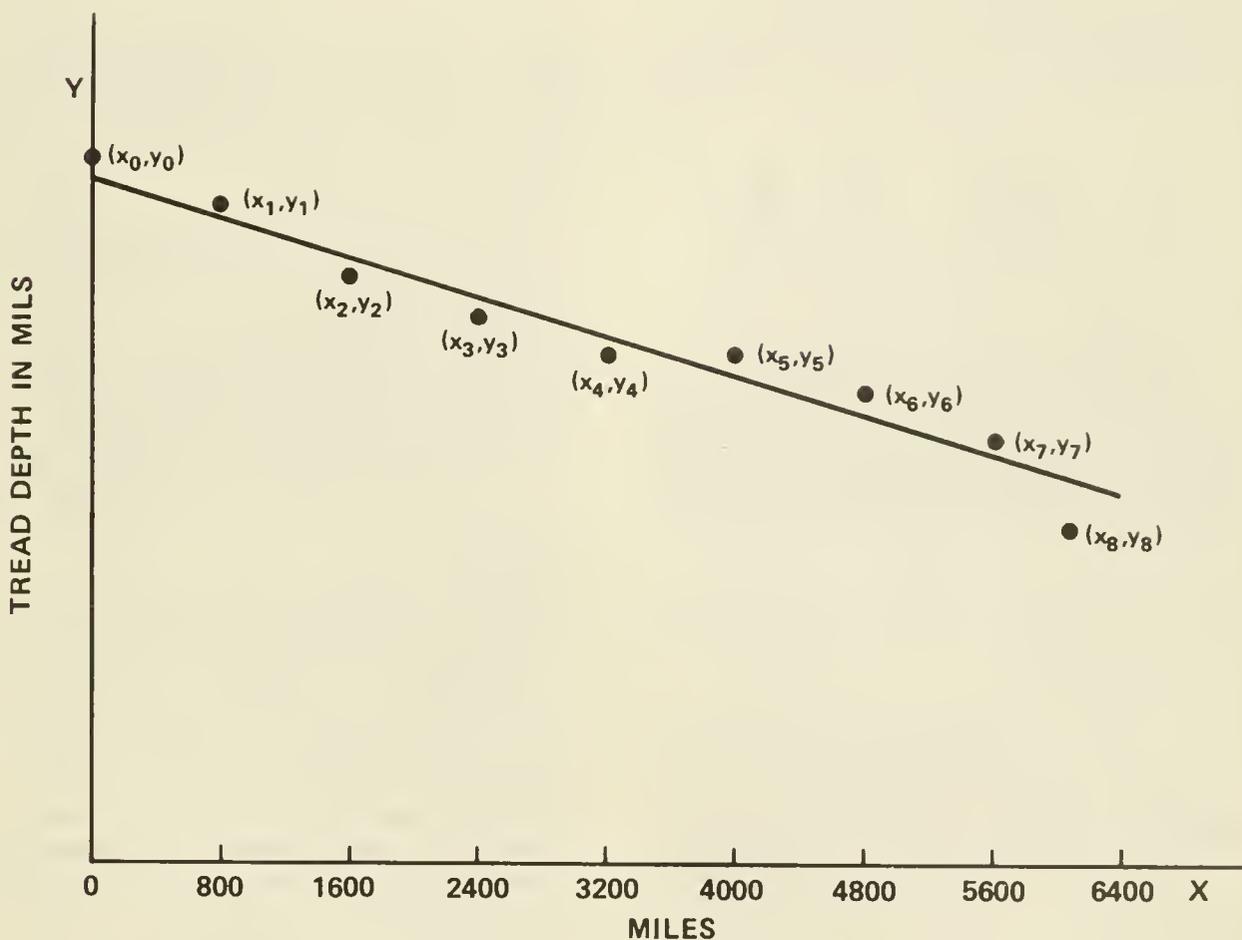


Figure 5

The absolute value of the slope of the regression line is an expression of the mils of tread worn per 1,000 miles, and is calculated by the following formula:

$$b = 1000 \frac{\left( \sum_{j=0}^8 X_j Y_j - \frac{1}{9} \sum_{j=0}^8 X_j \sum_{j=0}^8 Y_j \right)}{\sum_{j=0}^8 X_j^2 - \frac{1}{9} \left( \sum_{j=0}^8 X_j \right)^2}$$

The "y" intercept of the regression line (a) in mils is calculated by the following formula:

$$a = \frac{1}{9} \sum_{j=0}^8 Y_j - \frac{b}{9000} \sum_{j=0}^8 X_j$$

**§ 575.106 Acceleration and passing ability**

(a) *Purpose and scope.* This section requires manufacturers of passenger cars and motorcycles to provide information on vehicle acceleration and passing ability under low and high speed conditions.

(b) *Application.* This section applies to passenger cars and motorcycles manufactured on or after January 1, 1970.

(c) *Required information.* Each manufacturer shall furnish the information in (1) through (3), below, in the form illustrated in Figure 1. Each vehicle in the group to which the table of performance information applies shall be capable, under the conditions specified in paragraph (d), of performing at least as well as the table indicates.

(1) *Vehicle description.* The group of vehicles to which the table applies, identified in the terms by which they are described to the public by the manufacturer.

(2) *Passing time and distance.* The time in seconds and the distance in feet hypothetically required to pass a vehicle 55 feet long traveling at 20 and 50 miles per hour (mph), under the conditions of paragraph (d). If the vehicle for which information is provided would be unable to perform a passing maneuver because it cannot exceed 20 or 50 mph, the notation "not capable" shall be entered.

(3) *Notice.* The following notice, placed in proximity to the figure: "The information presented represents results obtainable by skilled drivers under controlled road and vehicle conditions, and the information may not be correct under other conditions."

(d) *Conditions and procedures.*

(1) *Vehicle, road and ambient conditions.* The data provided in the format of Figure 1 shall represent a level of performance that can be equalled or exceeded by each vehicle in the group to which the table applies, under the following conditions:

(i) Vehicle is at maximum loaded vehicle weight, except that the fuel tank is filled to any level between 90 and 100 percent of capacity.

(ii) Fuel and lubricants are selected and adjustments are made according to the manufacturer's published recommendations.

(iii) Break-in period is completed according to the manufacturer's recommendations.

(iv) Engine is at normal operating temperature.

(v) The following accessories and equipment are operating at maximum power-consuming condition: *Passenger cars:* air conditioner, or heater if vehicle is not equipped with air conditioner, windshield wipers, and headlamps on high beam. *Motorcycles:* headlamps on high beam.

(vi) Ambient temperature is between 59°F and 85°F, ambient dry barometric pressure is between 28.50 in. Hg and 29.50 in. Hg, and relative humidity is between 30% and 60%.

(vii) The roadway lane has a grade of zero percent, and the road surface has a skid number of 75.

(viii) Wind velocity is zero.

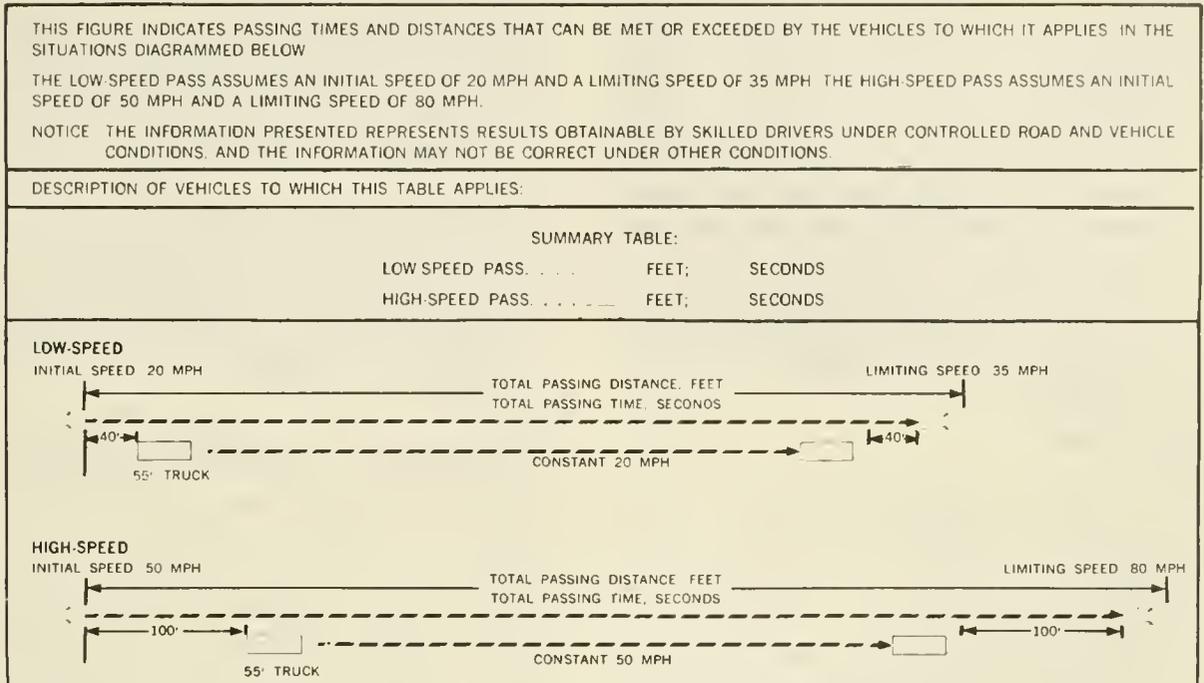


FIGURE 1

(2) *Hypothetical maneuvers.* The data provided shall represent the performance capability of the vehicle in performing the two hypothetical maneuvers described below. The passing distances are the distances traveled by the passing vehicle during the maneuvers described in (i) and (ii). The passing times are the times required to travel the passing distances.

(i) The vehicle for which the information is provided ("passing vehicle") follows another vehicle ("pace vehicle") that is 55 feet long, with the leading edge of the passing vehicle 40 feet behind the trailing edge of the pace vehicle, and both vehicles traveling 20 mph. The pace vehicle travels at constant speed throughout. The passing vehicle is in a different lane from the pace vehicle. The passing maneuver begins when the passing vehicle accelerates at its maximum rate up to a limiting speed of 35 mph, or to its maximum speed if less than 35 mph. It maintains that speed, or maximum acceleration if unable to reach either the limiting or maximum speed, until the end of the maneuver, which occurs when its trailing edge is 40 feet ahead of the leading edge of the pace vehicle.

(ii) Same as (i), with the substitution of an initial speed of 50 mph (instead of 20 mph), a limiting speed of 80 mph (instead of 35 mph), and beginning and ending separation of 100 feet (instead of 40 feet.)

(3) *Performance determination.* The determination of the vehicle's passing times and distances in performing the hypothetical maneuvers described in (2) shall be based on the vehicle's actual performance capability in a maximum-rate acceleration, with transmission in gear and without use of clutch or brake before beginning the acceleration, as follows:

(i) Accelerate the vehicle as rapidly as possible from a constant speed of 20 mph to at least 35 mph, or to the maximum speed if it is lower than 35 mph.

(ii) Accelerate the vehicle as rapidly as possible from a constant speed of 50 mph to at least 80 mph or to the maximum speed if it is lower than 80 mph.

(iii) Record the distance traveled (D) as a function of time (T) as determined in accordance with both (i) and (ii) above.

(4) *Graphic determination of passing time and distance.* Ascertain the vehicle's capability to perform the hypothetical maneuvers by the following method.

Symbols: (All times are in seconds and all distances in feet. For the purposes of the determination, speeds must be converted to feet per second.)

I=Separation between passing and pace vehicles at beginning and end of the maneuver: 40 feet for the low-speed pass and 100 feet for the high-speed pass

L=Length of the passing vehicle

V=Speed of the pace vehicle: 20 mph for the low-speed pass and 50 mph for the high-speed pass

D=Distance

T=Time

(i) Plot a straight line having a slope equal to the speed (V) of the pace vehicle, starting at point  $T=0, D=2I+L+55$ , as illustrated in Figure 2.

(ii) Using the data obtained in (d)(3) (iii), plot the distance vs. time curve for the passing vehicle at maximum acceleration, with starting point at  $T=0, D=0$ , and stopping at the point where the vehicle reaches the limiting speed (35 or 80 mph respectively) or its maximum speed if lower. If this curve intersects the curve for the pace vehicle plotted in (i) before the point where the passing vehicle reaches the limiting or maximum speed, it need not be plotted beyond the point of intersection.

(iii) If the curve plotted in (ii) does not intersect the curve for the pace vehicle be-

fore the point where the passing vehicle reaches the limiting or maximum speed, extend the passing vehicle's curve from that point with a straight line whose slope equals either the limiting or maximum speed respectively.

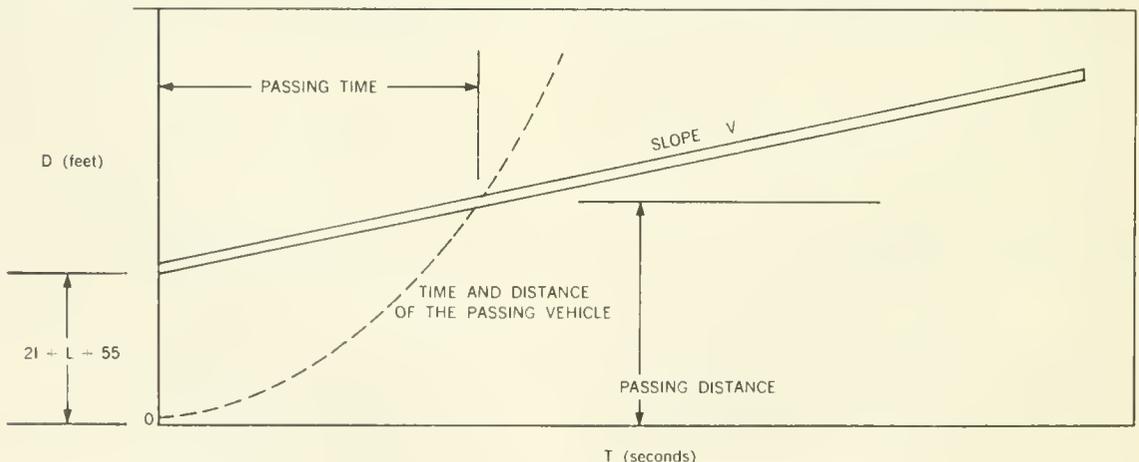
(iv) The intersections of the curves for the pace vehicle and passing vehicle obtained in either (ii) or (iii), plotted for both the low-speed and the high-speed pass, represent the passing times and distances required to be provided in the form of Figure 1.

**[Interpretation of Availability Requirements**

The purpose of this interpretive notice is to provide that the requirement that copies of consumer information be made available for retention by prospective purchasers, or sent by mail at such a purchaser's request, does not apply to vehicles no longer in production on January 1, 1972, the effective date of the requirement.

In response to the 1970 amendment of the National Traffic and Motor Vehicle Safety Act (P.L. 91-625, 84 Stat. 262), the NHTSA issued on October 2, 1971 (36 F.R. 19310) an amendment to the Consumer Information regulations, effective January 1, 1972, that requires information compiled by manufacturers to be available for retention by prospective purchasers, or for mailing to them, in addition to the previous requirement that such information be available for

**GRAPHIC DETERMINATION OF PASSING TIME AND DISTANCE**



**FIGURE 2**

inspection by such purchasers at locations where new vehicles are sold. The amendment provides that the information be available for retention or mailing for "each vehicle offered for sale" by persons having certain legal relationships with the manufacturer.

It has been brought to the agency's attention that some manufacturers and dealers still have new vehicles of previous model years available for sale for which retention copies have never been or are no longer available. It is recognized that the cost of producing new information for these older vehicles would probably outweigh the benefits to consumers.

Accordingly, the October 2 amendment concerning availability of consumer information for retention and mailing will be considered effective only with respect to vehicle models that are produced or in production on or after January 1, 1972.

This notice is issued pursuant to sections 112 and 119 of the National Traffic and Motor Vehicle Safety Act (15 U.S.C. 1401, 1407, and the delegation of authority at 49 CFR 1.51.)

Issued on December 10, 1971. (36 F.R. 24004—December 17, 1971)】

**34 F.R. 8112**  
**May 23, 1969**



**PREAMBLE TO PART 576—RECORD RETENTION****(Docket No. 74-31; Notice 1)**

This notice establishes an immediate temporary requirement for retention by motor vehicle manufacturers of records concerning malfunctions that may be related to motor vehicle safety.

By a separate notice published today, 39 FR 30048, the NHTSA proposes to establish permanent requirements for the retention of records by manufacturers. The proposed rule would require motor vehicle manufacturers to retain for 5 years all records in their possession relating to failures, malfunctions, or flaws that could be a causative factor in accidents or injuries. These records are needed in agency investigations of possible defects related to motor vehicle safety, or of nonconformity to the safety standards and regulations. A fuller discussion of the proposal is contained in that notice.

The NHTSA finds it important that existing records and those that may be generated or acquired while this rulemaking is under consideration not be disposed of prior to the permanent effectiveness of the rule. In order to maintain the status quo, therefore, this rule is issued to be

effective immediately upon posting for public inspection at the *Federal Register*. For the reasons stated, pursuant to 5 U.S.C. 553(b), notice and public procedure thereon with respect to this interim notice are found to be impracticable and contrary to the public interest. This rule in its present form will be effective only until action is taken upon the proposed permanent rule issued concurrently.

In light of the foregoing, a new Part 576, *Record Retention*, is added to Title 49, Code of Federal Regulations.

*Effective date:* August 15, 1974.

**AUTHORITY:** Sec. 108, 112, 113, 119, Pub. L. 89-563, 80 Stat. 718, 15 U.S.C. 1397, 1401, 1402, 1407; delegation of authority at 49 CFR 1.51.

Issued on August 13, 1974.

James B. Gregory  
Administrator  
**39 F.R. 30045**  
**August 20, 1974**



**PART 576—RECORD RETENTION**  
**(Docket No. 74-13; Notice 1)**

Sec.

**576.1 Scope.**

**576.2 Purpose.**

**576.3 Application.**

**576.4 Definitions.**

**576.5 Basic Requirement.**

**576.6 Records.**

**576.7 Retention.**

**576.8 Malfunctions Covered.**

§ 576.1 **Scope.** This part establishes requirements for the retention by motor vehicle manufacturers of complaints, reports, and other records concerning motor vehicle malfunctions that may be related to motor vehicle safety.

§ 576.2 **Purpose.** The purpose of this part is to preserve records that are needed for the proper investigation, and adjudication or other disposition, of possible defects related to motor vehicle safety and instances of nonconformity to the motor vehicle safety standards and associated regulations.

§ 576.3 **Application.** This part applies to all manufacturers of motor vehicles, with respect to all records generated or acquired after August 15, 1969.

§ 576.4 **Definitions.** All terms in this part that are defined in the Act are used as defined therein.

§ 576.5 **Basic Requirements.** Each manufacturer of motor vehicles shall retain as specified in § 576.7 all records described in § 576.6 for a period of 5 years from the date on which they were generated or acquired by the manufacturer.

§ 576.6 **Records.** Records to be retained by manufacturers under this part include all documentary materials, films, tapes, and other information-storing media that contain information concerning malfunctions that may be related to motor vehicle safety. Such records include, but are not limited to, communications from vehicle users and memoranda of user complaints; reports and other documents related to work performed under, or claims made under, warranties; service reports or similar documents from dealers or manufacturer's field personnel; and any lists, compilations, analyses, or discussions of such malfunctions contained in internal or external correspondence of the manufacturer.

§ 576.7 **Retention.** Duplicate copies need not be retained. Information may be reproduced or transferred from one storage medium to another (*e.g.*, from paper files to microfilm) as long as no information is lost in the reproduction or transfer, and when so reproduced or transferred the original form may be treated as a duplicate.

§ 576.8 **Malfunctions covered.** For purposes of this part, "malfunctions that may be related to motor vehicle safety" shall include, with respect to a motor vehicle or item of motor vehicle equipment, any failure or malfunction beyond normal deterioration in use, or any failure of performance, or any flaw or unintended deviation from design specifications, that could in any reasonably foreseeable manner be a causative factor in, or aggravate, an accident or an injury to a person.

**39 F.R. 30045**  
**August 20, 1974**



## PREAMBLE TO PART 577—DEFECT NOTIFICATION

(Docket No. 72-7; Notice 2)

This notice establishes a new regulation covering notifications of motor vehicle safety defects and nonconformity to safety standards. The notice proposing these regulations was published May 17, 1972 (37 F.R. 9783).

The regulation is intended to improve the response of owners in vehicle notification campaigns. Data which the NHTSA has been receiving on the completion rates of notification campaigns show a wide range of completion rates, with campaigns involving newer vehicles, and more serious safety problems, having higher completion rates than others. In many campaigns, however, the rate is alarmingly low.

An examination of the notifications sent by manufacturers reveals wide disparity in emphasis. Although precise evaluation of the impact of notification letters is difficult, due to its being largely subjective, the NHTSA is of the opinion that many notifications have tended to deemphasize the safety problems involved. Some of these notification letters are questionably within the requirements of the National Traffic and Motor Vehicle Safety Act, and litigation on a case by case basis to improve them is practicable. These regulations are intended to ensure that all notification letters contain sufficient information, as determined by NHTSA, to properly notify purchasers.

The regulation applies to manufacturers of incomplete and complete motor vehicles, and motor vehicle equipment. In the case of vehicles manufactured in two or more stages, compliance by any one of the manufacturers of the vehicle is considered compliance by all. This provision is based on similar language in the Defect Reports regulation (Part 573 of this chapter), and is included in response to comments received.

The regulation requires the notification to contain substantially the information specified in

the proposal. It requires each notification to begin with a statement that it is sent pursuant to the requirements of the National Traffic and Motor Vehicle Safety Act. The NHTSA did not concur with comments to the effect that the inclusion of this statement would not promote the purpose of the regulation. The regulation requires the notification to state that the manufacturer, or the National Highway Traffic Safety Administrator, as the case may be, has determined that a defect relating to motor vehicle safety (or a noncompliance with a motor vehicle safety standard) exists in the vehicle type, or item of motor vehicle equipment, with which the notification is concerned. When the manufacturer (or the Administrator) has, as part of his determination, also found that the defect may not exist in each such vehicle or equipment item, he may include a statement to that effect. The NHTSA has decided to allow such statements based on comments that many defects in fact do not exist in each vehicle or equipment item of the group whose owners are notified.

The manufacturer must also describe the defect, evaluate the risk it poses to traffic safety, and specify measures which the recipient should take to have it remedied. In each case, the regulation requires information which the NHTSA has determined will meet these objectives. In describing the defect, the manufacturer must indicate the vehicle system or particular items of equipment affected, describe the malfunction that may occur, including operating conditions that may cause it to occur, and precautions the purchaser should take to reduce the likelihood of its occurrence. In providing that the vehicle system affected be mentioned, the regulation reflects comments to the effect that listing each particular part involved would be too technical to be useful to most consumers.

In evaluating the risk to traffic safety, the manufacturer must indicate if vehicle crash is the potential result, and whatever warning may occur. Where vehicle crash is not the potential result, the manufacturer must indicate the general type of injury which the defect can cause. Although many comments protested that it was impossible to predict a specific type of injury, the NHTSA believes that manufacturers can easily foresee the general type of injury, such as asphyxiation, that can result from those defects which are not expected to result in crashes.

In stating measures to be taken to repair the defect, the requirements differ in the case where the manufacturer's dealers repair the vehicle free of charge to the purchaser, where the manufacturer merely offers to pay for the repair, and where he refuses to pay for the repair. The purpose of this distinction is to provide information sufficient to have adequate repairs made in each case.

Where the manufacturer's dealers repair the vehicle free of charge, the notification must include a general description of the work involved, the manufacturer's estimate of when his dealers will be supplied with parts and instructions, and his estimate of the time reasonably necessary to perform the labor involved in correcting the defect. The agency's position is that consumers are entitled to know approximately when their cars will be repaired and how much labor is needed in order for the repair to be made. The NHTSA realizes that dealers frequently retain vehicles longer than the actual work involved, due to difficulties in scheduling repairs. However, manufacturers are free to impart this information to consumers under the regulation. Some comments objected to requiring manufacturers to provide information on when replacement parts will be available, on the basis that manufacturers cannot know, at the time a notification is issued, precisely when parts deliveries will be made to dealers. To include this information, it is argued, would therefore delay the issuance of the notification. The NHTSA has modified the proposed language to allow manufacturers to "estimate" when corrective parts will be available. The estimate would be based on the manufacturer's knowledge at the time the notification is sent, thereby eliminating any reasons for delay.

When manufacturers do not provide for repairs to be made by dealers, the notification is required to contain, in addition, full lists of parts and complete instructions on making the repairs. The regulation also requires the manufacturer to recommend, generally, where the vehicle should be repaired, and manufacturers are free to make general and specific recommendations. This requirement reflects the intent of the proposal that manufacturers who believe particular repairs may require special expertise should indicate that fact to purchasers.

When the manufacturer does not offer to pay for repairs, he must, in addition, include full cost information on necessary parts. The notice would have required the retail cost of all parts, and information on labor charges of the manufacturer's dealers in the general area of the purchaser. In response to comments, the cost information is limited to the suggested retail price of parts. Manufacturers have indicated they do not set actual prices of parts, but do have suggested list prices. With respect to labor charges, manufacturers have indicated that labor charges vary, and that requiring them to ascertain exact charges would delay issuance of notifications. The NHTSA believes these comments to be well-founded, and has dropped the proposed requirements regarding labor charges. Consumers will still have information on costs of parts, and time necessary for repairs to be performed, from which they can obtain a fair idea of the cost of a repair.

The regulations prohibit the notification from stating or implying that the problem is not a defect, or that it does not relate to motor vehicle safety. Moreover, in those cases where the notification is sent pursuant to the direction of the Administrator, it cannot state or imply that the manufacturer disagrees with the Administrator's finding. Many comments opposed these requirements on the basis that they unconstitutionally limited manufacturers' freedom of speech. The NHTSA emphatically rejects this contention. Notification letters are not intended to serve as forums where manufacturers can argue that problems are not safety-related or dispute the Administration's findings. Their purpose is to unambiguously and adequately induce owners to remedy a potentially hazardous situation. The

NHTSA is of the opinion that there is ample precedent that allows the Federal government to require manufacturers to warn purchasers in a particular manner that certain products they manufacture may be hazardous. If a manufacturer does not believe that his condition is a safety-related defect, he is not required by law to notify owners at all. It is only when he determines that a defect exists that he must notify in accordance with the regulations. Similarly, when the Administrator has made the finding that a certain product is defective, the manufacturer can administratively and judicially challenge this determination as provided in the National Traffic and Motor Vehicle Safety Act before sending a notification.

The NHTSA received other objections to the proposed requirements. Numerous tire manufacturers argued that parts of the regulation dealing with repairs of defects are inappropriate when applied to them, since repairs generally meant replacement. Certain manufacturers of lighting equipment argued that notification requirements should not apply to them at all. The NHTSA disagrees with both of these contentions. In the case of tire manufacturers, the NHTSA believes that the requirements can be followed. If the repair of a defective tire entails its replacement, this can certainly be stated within the regulatory scheme. Similarly, lighting equipment manufacturers are responsible for defects to the same extent as manufacturers of other equipment. The NHTSA rejects completely the argument that no lighting failures can be considered safety-related because of the millions of lights that burn out every year without resulting in accidents. The question in each case is not whether a failure may occur, but whether a defect exists, and whether the defect may cause a hazardous situation to arise.

The notice of proposed rulemaking would have prohibited manufacturers from making statements contemporaneous with the notification that disagreed with its conclusions. This proposal has not been adopted. After careful consideration, the NHTSA has determined that its inclusion is probably unnecessary. The agency's position is that if notification letters clearly and unambiguously describe and evaluate defects in accordance with this regulation, other statements

by manufacturers will not normally affect reactions of consumers.

Certain comments requested that manufacturers be allowed to state in the notification that it does not constitute an admission of liability or wrongdoing. The regulation does not preclude the making of such statements, as the agency has concluded that their inclusion will not significantly deter owners from having repairs made.

One comment suggested that the notification be required to contain a postage-free card by which consumers could notify manufacturers when vehicles had been sold or otherwise disposed of. While the NHTSA believes this practice would be advantageous in improving notification campaigns, it has concluded that such a requirement would be outside the scope of the regulation, which is limited to notifications to first purchasers and warranty holders.

Certain comments objected to the regulations on the ground that they prescribed a rigid format in an area where each case must be treated separately, and thus where flexibility was required. The NHTSA has modified to some extent the proposed restrictions on format. Manufacturers are free, within the limits established, to compose notifications to fit each case. As issued, these regulations do not require rigid, inflexible letters (only the first two sentences must contain specific statements in a set order), but require that manufacturers include certain important items of information. It is hoped that manufacturers in meeting these requirements will provide required information in easily understandable form.

In light of the above, a new Part 577, "Defect Notification" is added to Chapter V of Title 49, Code of Federal Regulations, to read as set forth as below.

*Effective date:* March 26, 1973. Because these requirements are not technical in nature, and do not require lead times for compliance, good cause exists, and is hereby found, for an effective date less than 180 days from the day of issuance.

Issued on January 17, 1973.

Douglas Toms  
Administrator

38 F.R. 2215  
January 23, 1973



## PREAMBLE TO AMENDMENT TO PART 577—DEFECT NOTIFICATION

(Docket No. 72-7; Notice 3)

This notice responds to petitions for reconsideration of the Defect Notification regulations, published January 23, 1973 (38 FR 2215). Petitions were received from the Firestone Tire and Rubber Company, Chrysler Corporation, the Motor and Equipment Manufacturers' Association, and the Recreational Vehicle Institute. A petition was also received from the Wagner Electric Company. Although not received within 30 days of the regulation's publication (49 CFR 553.35), it has been considered in the preparation of this notice. Insofar as this notice does not grant the requests of the petitioners, they are hereby denied.

The Firestone Tire and Rubber Company has petitioned for reconsideration of section 577.6, "Disclaimers", which prohibits manufacturers from starting or implying that the notification does not involve a safety related defect. Firestone requested that the provision, for Federal Constitutional reasons, be dropped from the rule. This request is denied. The NHTSA does not believe, for the reasons set forth in the notice of January 23, 1973 (38 FR at 2216), that the provision is violative of the Constitution.

Chrysler Corporation has requested that the phrase, "his dealers" be modified in section 577.4(e)(1)(ii), which requires the manufacturer to estimate the date by which his dealers will be supplied with corrective parts and instructions. It argues that the phrase "his dealers" could be interpreted to mean all dealers, regardless of whether all of the manufacturer's dealers are involved in the campaign. This request is denied. Neither section 113 of the Safety Act nor the regulation require a notification campaign to extend to all of the manufacturer's dealers, whether or not they have any involvement in a particular campaign. The NHTSA does not believe that the phrase "his dealers", when read in context, means all of the manufacturer's dealers.

Chrysler also asks that special requirements be specified for the notification of "noncompliance non-operational defects", citing as an example the improper placement of the VIN plate under Motor Vehicle Safety Standard No. 115. Chrysler states that existing provisions of the regulation dealing with malfunctions (specifically 577.4(c)(2), (c)(3), (c)(4)), and evaluating the risk to traffic safety (sections 577.4(d), (d)(1), (d)(1)(i), (d)(1)(ii), (d)(2)) are not pertinent to these defects. This request is denied. The NHTSA does not believe that separate requirements for notification of the type of defect described by Chrysler are either necessary or desirable. If a particular defect does not involve a malfunction, to be in compliance with the regulation a manufacturer should, in response to the appropriate provisions of the regulation, indicate that to be the case. The NHTSA believes this approach will notify purchasers of the defect as effectively as separate, more specific requirements. The NHTSA does not agree that the relationship to safety of these types of defects should not be evaluated in notification letters, similarly to other defects.

The Motor and Equipment Manufacturers Association (MEMA) objects to the requirements of sections 577.4(e)(2)(vi) and 577.4(e)(3)(vi) that the manufacturer recommend whom the purchaser should have perform necessary repair work, and requests that these provisions be deleted. MEMA argues that the requirement is anti-competitive in that it sanctions the steering of consumers to vehicle dealerships for repairs, to the detriment of the independent repair industry, even when the manufacturer does not pay for the repair. MEMA argues that original equipment replacement parts are frequently more expensive than competitively produced parts, resulting in added costs to owners. It argues also that limiting repairs to dealers precludes the use

of the full domestic repair industry, which should be utilized fully given the magnitude of recent notification campaigns.

While the NHTSA appreciates the concern of this association in not being precluded from a large market, the NHTSA believes the requirement as issued to be consistent with the National Traffic and Motor Vehicle Safety Act and the need for motor vehicle safety. The NHTSA has, in issuing the requirement, indicated that manufacturers should indicate to purchasers when special expertise may be necessary to correct defects. The repairs in issue do not involve normal maintenance, but constitute defects whose proper repair is essential to the safety of the nation's highways. Frequently these repairs involve a higher degree of expertise and familiarity with a particular vehicle than that required to perform normal maintenance. If such expertise will more likely be found at dealerships, in the view of the vehicle manufacturer, the NHTSA believes that opinion should be imparted to purchasers.

Moreover, even if the NHTSA deleted the requirement the manufacturer could if he desired, consistently with the regulation, recommend a repair facility. The NHTSA would not prohibit the making of such a recommendation, for it is responsive to the statutory requirement that the notification contain a statement of the measures to be taken to repair the defect (15 U.S.C. 1402(c)). Moreover, the argument that the regulation stifles competition does not appear to have merit. In the event the manufacturer does not bear the cost of repair, the regulation (§ 577.4(e)(3)(i)) requires the manufacturer to provide the purchaser with the suggested list price of repair parts. As a consequence, purchasers will be provided with information with which they can "shop", with full knowledge, for the least expensive repair facilities. The petition is accordingly denied.

The Recreational Vehicle Institute (RVI) has petitioned that the requirements of both section 577.4(a), requiring an opening statement that the notification is sent pursuant to the Act, and section 577.6, prohibiting disclaimers, be deleted. RVI argues such requirements may result in delay by manufacturers in determining that defects

exist, forcing the use of administrative and legal procedures before purchasers are notified. The agency cannot accept the position that the notification should be diluted because of possible evasion by manufacturers. The NHTSA believes that the need that notification letters fully inform purchasers outweighs the possible problems caused by manufacturers delaying their notifications to purchasers until forced to notify them. The request is denied.

RVI points out that section 577.4 seems to assume that defects will be evidenced by some form of mechanical failure. It asks, therefore, whether a safety-related defect can exist where proper corrective action to avoid an occurrence or possible occurrence is appropriate maintenance or operational use. RVI also requests, if NHTSA adheres to its present position regarding these issues, that it undertake rulemaking to define "safety related defect". For the following reasons, these requests are denied. There is no intent in the regulation to limit the concept of safety related defects to those involving mechanical failures. As stated above, in reply to the petition from Chrysler, non-mechanical defects can be the basis of defect notification, and purchasers can be fully notified of them under the present regulatory scheme. Moreover, the NHTSA believes any attempt to precisely define safety related defect would be ill-advised. Whether a defect exists depends solely on the facts of each particular situation. The fact that such determinations may encompass a wide variety of factual situations, and may consequently be difficult to make, does not mean that it is necessary, desirable, or even possible to replace the decision with a simple formula. The NHTSA believes, on the contrary, that the relatively broad definition of defect contained in the Safety Act is best suited to the wide variety of defective conditions that may arise.

RVI has also pointed out that references to a manufacturer's dealers in section 577.4(e), specifying measures to be taken to repair the defect, overlook the fact that manufacturers' dealers may not always provide service facilities, or that manufacturers may use service facilities other than dealers. The NHTSA agrees with RVI, and has therefore modified the provisions of that

section to include "other service facilities of the manufacturer", as well as his dealers.

RVI requested that the regulation be amended to permit compliance by either a component manufacturer or a vehicle manufacturer, when the defect involves a specific component. RVI also requested that compliance be permitted by either the vehicle alterer or the complete vehicle manufacturer in cases involving altered vehicles. The regulations do not prohibit the sending of notification letters by persons other than the vehicle manufacturer. Accordingly, no modification of the regulation is called for. However, manufacturers who do utilize the services of others in meeting requirements still bear the ultimate responsibility for compliance with the regulation under the National Traffic and Motor Vehicle Safety Act.

The Wagner Electric Company has requested that the provisions of the regulation regarding manufacturers of motor vehicle equipment (excluding tires) be reconsidered in light of the fact that, under present marketing procedures, it is difficult or impossible for such manufacturers to notify jobbers, installers, dealers, or consumers. The notification required by the regulation is directed at the notification sent to retail purchasers and not that sent to distributors or dealers of the manufacturer. The notification of the latter is subject only to the statutory provision

of section 113 of the Safety Act (15 U.S.C. 1402). Moreover, manufacturers of equipment (other than tires) who do not have the names of first purchasers are not required to notify them either under the National Traffic and Motor Vehicle Safety Act or the regulation. There is consequently no need for modification of the regulation for the reasons presented by Wagner, and its request is accordingly denied.

In light of the above, Part 577 of Title 49, Code of Federal Regulations, "Defect Notification", is amended . . . .

Effective date: April 17, 1973. These amendments impose no additional burdens on any person, and serve only to clarify the application of existing requirements to specific situations. Accordingly, notice and public procedure thereon are unnecessary, and good cause exists for an effective date less than thirty days from the day of publication.

(Sec. 108, 112, 113, 119, Pub. L. 89-563, 80 Stat. 718 as amended, sec. 2, 4, Pub. L. 91-265, 84 Stat. 262 (15 U.S.C. 1397, 1401, 1402, 1408); delegation of authority at 49 CFR 1.51)

Issued on April 10, 1973.

James E. Wilson  
Acting Administrator

**38 F.R. 9509**  
**April 17, 1973**



## PREAMBLE TO AMENDMENT TO PART 577—DEFECT NOTIFICATION

(Docket No. 74-42; Notice 2)

This notice amends 49 CFR Part 577, *Defect Notification*, to require that bilingual notification be sent to owners in certain cases, and to clarify the wording manufacturers are required to use to indicate their determination that a safety-related defect exists.

A notice of proposed rulemaking on this subject was published on November 25, 1974, (39 F.R. 41182) and an opportunity afforded for comment. The Center for Auto Safety had questioned the efficacy of defect notification campaigns in Puerto Rico conducted in the English language since the primary language of that Commonwealth is Spanish. A National Highway Traffic Safety Administration (NHTSA) survey in Puerto Rico confirmed that there was a need for bilingual defect notification. It was proposed that whenever the address of the purchaser is in either the Commonwealth of Puerto Rico or the Canal Zone the notification be sent in both the English and Spanish languages.

The notice also proposed clarifying § 577.4(e) (1) so that the second paragraph of a notification letter could no longer be written to reflect a manufacturer's belief that the cause of a defect is an item other than that which he manufactured.

Only Chrysler Corporation and Firestone Tire and Rubber Company commented on bilingual notification. Both stated that it was not necessary for the Canal Zone. Firestone also felt that the requirement to translate the notification would delay its mailing, and voiced the belief that NHTSA must express the exact wording in Spanish for § 577.4(a) and (b). Chrysler commented that it had been providing bilingual notification to owners of automobiles purchased in Puerto Rico but that extensive and burdensome data-processing reprogramming would be required to identify owners of vehicles originally

purchased on the mainland and later taken to Puerto Rico.

The NHTSA believes that the language problem is a significant factor in the below-average response to notification campaigns in Puerto Rico, and that owner response rate to campaigns in the Canal Zone will improve if notifications are provided in Spanish as well as English. Information from the Census Bureau indicates that more than 50% of the residents of each area speak Spanish as their primary language. Translation may delay mailing to these areas a few days, but this is deemed inconsequential compared with the benefits to be derived by an improved response to campaigns. This agency does not consider that it need specify the exact wording in Spanish of § 577.4(a) and (b). If it appears that manufacturers are providing ambiguous statements it will consider the matter further. Finally, since section 153(a)(1) of the National Traffic and Motor Vehicle Safety Act, 15 U.S.C. 1413(a)(1), requires notification to be sent to the person who is registered under State law as the owner of the vehicle to be campaigned, Chrysler's comments on reprogramming of data do not appear to have merit.

This notice also amends § 577.4(b)(1), which presently requires the second sentence of the notification to state that the manufacturer has determined that a defect which relates to motor vehicle safety exists in its motor vehicles or motor vehicle equipment. Certain notification letters have characterized the defect as existing in a vehicle or item of equipment not manufactured by the manufacturer making the determination. The intent of the section is that a manufacturer of motor vehicles would state its determination that the defect exists in the motor vehicle it manufactures, while a manufacturer of motor vehicle equipment would state its de-

termination that the defect exists in the motor vehicle equipment it manufactures. If the manufacturer believes the cause of the defect to be an item other than that which he manufactured, that information can be imparted in the other parts of the notification, but not in the second paragraph where the content is specifically prescribed.

Kelsey-Hayes Company and Skyline Corporation commented on the proposal to clarify § 577.4(b)(1). Both objected to it, feeling that the present regulation is adequate and that the mandatory statement may be prejudicial. However, in the opinion of this agency, manufacturers with limited experience in composing notification letters have in many cases misinterpreted

§ 577.4(b)(1). Clarification of the sentence should eliminate mistakes.

In consideration of the foregoing, Part 577 of Title 49, Code of Federal Regulations, *Defect Notification*, is amended. . . .

*Effective date:* September 14, 1975.

(Sec. 108, 112, 113, 119, Pub. L. 89-563, 80 Stat. 718; sec. 2, 4, Pub. L. 91-265, 84 Stat. 262 (15 U.S.C. 1397, 1401, 1402, 1407); delegation of authority at 49 CFR 1.51.)

Issued on June 10, 1975.

James B. Gregory  
Administrator

**40 F.R. 25463**  
**June 16, 1975**

## PART 577—DEFECT NOTIFICATION

(Docket No. 72-7; Notice 2)

*Sec.*

- 577.1 Scope.**
- 577.2 Purpose.**
- 577.3 Application.**
- 577.4 Notification initiated by manufacturer.**
- 577.5 Notification pursuant to administrative proceeding.**
- 577.6 Disclaimers.**
- 577.7 Conformity to statutory requirements.**

§ 577.1 **Scope.** This part sets forth requirements for notification to first purchasers and warranty holders of motor vehicles and motor vehicle equipment of the possibility of a defect relating to motor vehicle safety or a noncompliance with a Federal motor vehicle safety standard.

§ 577.2 **Purpose.** The purpose of this part is to ensure that defect notifications provide adequate information to recipients, and effectively motivate owners of potentially defective or non-complying motor vehicles or items of motor vehicle equipment to have vehicles and equipment inspected and, where necessary, repaired as quickly as possible.

§ 577.3 **Application.** This part applies to manufacturers of complete motor vehicles, incomplete motor vehicles, and motor vehicle equipment. In the case of vehicles manufactured in two or more stages, compliance by either the manufacturer of the incomplete vehicle or any subsequent manufacturer shall be considered compliance by each of those manufacturers.

§ 577.4 **Notification initiated by manufacturer.** Whenever a manufacturer of motor vehicles or tires determines that a defect potentially existing in any motor vehicle or item of motor ve-

hicle equipment he produces relates to motor vehicle safety, he shall notify by certified mail the first purchaser (where known) of such vehicle or item of motor vehicle equipment, and any subsequent purchaser to whom a warranty on such vehicle or item of equipment has been transferred. The notification shall contain the following information. In the case of paragraphs (a) and (b), the information shall be presented in the form and in the order specified. The information required in paragraphs (c), (d), and (e) may be presented in any order.

【Whenever the address of the purchaser is in either the Commonwealth of Puerto Rico or the Canal Zone, the notification shall be sent in both the English and Spanish languages. (40 F.R. 25463—June 16, 1975. Effective: 9/14/75)】

(a) An opening statement: “This notice is sent to you in accordance with the requirements of the National Traffic and Motor Vehicle Safety Act.”

(b) 【The statement: “(Manufacturer’s name or division) has determined that a defect which relates to motor vehicle safety exists in (identified motor vehicles, in the case of notification sent by a motor vehicle manufacturer; identified motor vehicle equipment, in the case of notification sent by a motor vehicle equipment manufacturer).” (40 F.R. 25463—June 16, 1975. Effective: 9/14/75)】

When the manufacturer determines that the defect may not exist in each such vehicle or equipment item, he may include, in addition, a statement to that effect.

(c) A clear description of the defect, which must include—

(1) Identification of the vehicle system or particular item or items of motor vehicle equipment affected;

(2) A description of the malfunction that may occur;

(3) A statement of operating or other conditions that may cause the malfunction to occur; and

(4) Precautions, if any, that the purchaser should take to reduce the chance that the malfunction will occur before the vehicle is repaired.

(d) An evaluation of the risk to traffic safety reasonably related to the defect.

(1) When vehicle crash is the potential occurrence, the evaluation must include whichever of the following statements is appropriate:

(i) That the defect can cause vehicle crash without prior warning, or

(ii) A description of whatever warning may occur, and a statement that if this warning is not heeded, vehicle crash can occur.

(2) When vehicle crash is not the potential occurrence, the evaluation must include a statement indicating the general type of injury to occupants of the vehicle, or to persons outside the vehicle, that can result from the defect.

(e) A statement of measures to be taken to repair the defect, in accordance with whichever of the following is appropriate.

(1) **When the manufacturer offers to repair the defect through his dealers or other service facility of the manufacturer without charge to the purchaser, the statement shall include: (38 F.R. 9509—April 19, 1973. Effective: 4/17/73)**

(i) A general description of the work involved in repairing the defect;

(ii) **The manufacturer's estimate of the day by which his dealers or other service facility of the manufacturer will be supplied with parts and instructions for correcting the defect; and (38 F.R. 9509—April 19, 1973. Effective: 4/17/73)**

(iii) The manufacturer's estimate of the time reasonably necessary to perform the labor required to correct the defect.

(2) **When the manufacturer does not provide for the repairs to be performed by his dealers or other service facility of the manufacturer, but will bear the cost of the repair, the statement shall include—(38 F.R. 9509—April 19, 1973. Effective: 4/17/73)**

(i) The name and part number of each part that must be added, replaced, or modified;

(ii) A description of any modifications that must be made to existing parts;

(iii) Information on where needed parts will be available, including the manufacturer's estimate of the day after which they will be generally available;

(iv) A detailed description (including appropriate illustrations) of each step required to correct the defect;

(v) The manufacturer's estimate of the time reasonably necessary to perform the labor required to correct the defect; and

(vi) The manufacturer's recommendation as to whom the purchaser should have perform the necessary work.

(3) When the manufacturer does not bear the cost of repair, the statement shall include—

(i) The name, part number, and suggested list price of each part that must be added or replaced;

(ii) A description of any modifications that must be made to existing parts, which must also be identified by name and part number;

(iii) Information on where needed parts will be available, including the manufacturer's estimate of the day after which they will be generally available;

(iv) A detailed description (including appropriate illustrations) of each step required to repair the defect;

(v) The manufacturer's estimate of the time reasonably necessary to perform the labor required to correct the defect; and

(vi) The manufacturer's recommendations as to whom the purchaser should have perform the necessary work.

**§ 577.5 Notification pursuant to administrative proceeding.** A notification made by a manufacturer of motor vehicles or motor vehicle equipment as a result of proceedings conducted pursuant to section 113(e) of the National Traffic and Motor Vehicle Safety Act. (15 U.S.C. 1402(e)), shall be made in the manner specified

in § 577.4(a) through § 577.4(e), except that the statement required pursuant to § 577.4(b) shall indicate that—

(a) The determination has been made by the National Highway Traffic Safety Administrator, and

(b) If appropriate, the determination is of noncompliance with a Federal motor vehicle safety standard.

**§ 577.6 Disclaimers.** (a) A notification sent pursuant to § 577.4 or § 577.5 shall not contain any statement or implication that the problem discussed in the letter is not a defect, that it does not relate to motor vehicle safety, and, except

as specifically provided in this part, that it is not present in the purchaser's vehicle.

(b) A notification sent pursuant to § 577.5 shall not state or imply that the manufacturer disagrees with the Administrator's finding of a defect relating to motor vehicle safety or a non-compliance with a Federal motor vehicle safety standard.

**§ 577.7 Conformity to statutory requirements.** A notification that does not conform to the requirements of this part shall not be in compliance with sections 108 and 113 of the National Traffic and Motor Vehicle Safety Act.

**38 F.R. 2215**  
**January 23, 1973**



**PREAMBLE TO PART 580—ODOMETER DISCLOSURE REQUIREMENTS**

(Docket No. 72-31; Notice 2)

The purpose of this notice is to establish a regulation that will require a person who transfers ownership in a motor vehicle to give his buyer a written disclosure of the mileage the vehicle has traveled. The regulation carries out the directive of section 408(a) of the Motor Vehicle Information and Cost Savings Act, Public Law 92-513, 86 Stat. 947, and completes the provisions of the Act under Title IV, Odometer Requirements.

The regulation was first proposed in a notice published in the *Federal Register* on December 2, 1972 (37 F.R. 25727). As a result of numerous comments on the proposal, the regulation as issued today differs in some respects from its initial form.

As stated in the proposal, the agency's goals were to link the disclosure statement as closely as possible to the documents required for transfer of ownership, so that buyers and sellers would know of the need for disclosure, and to do so in a manner that would not introduce an additional document into motor vehicle transactions. The agency therefore proposed the use of the certificate of title as the document for odometer disclosure.

Upon review of the comments, it became evident that in most jurisdictions it would not be feasible to use the title certificate to convey odometer information. The main drawback to its use lies in the prevalence of state laws providing that if a vehicle is subject to a lien, the title is held by the lienholder. As a result, it appears that in a majority of cases private parties selling motor vehicles do not have possession of a certificate of title, and convey their interest by other means.

In those States that permit the owner of a vehicle subject to a lien to retain the title, the

lienholder will be unable to make the odometer disclosure on the title if he attempts to sell the vehicle after repossession. In many States, furthermore, the title certificate is not large enough to contain an adequate odometer disclosure, and the existing data processing and filing equipment would not accommodate an enlarged certificate.

There appears to have been some apprehension that the Federal government intended to compel the States to amend their certificates of title. The Act does not, however, confer any authority over the States in this regard. Even if the regulation were to require transferor disclosure on the title, the States could decline to provide a form for disclosure on the title. This voluntary aspect of the States' participation is a further impediment to the use of the title certificate.

After review of the problems created by the use of the certificate of title, the agency has decided that the purposes of the Act are better served by prescribing a separate form as the disclosure document in most cases. Section 580.4 has been amended accordingly. To avoid the need for duplicate State and Federal disclosures in States having odometer disclosure laws or regulations, the section permits the State form to be used in satisfaction of the Federal requirement, so long as it contains equivalent information and refers to the existence of a Federal remedy.

It should be noted that although the certificate of title is no longer required to be used for disclosure, it can still be used as the disclosure document if it contains the required information and if it is held by the transferor and given by him to the transferee. The basic concept is that the disclosure must be made as part of the transfer, and not at some later time.

In addition to the changes from the proposal represented by the change from the certificate of title to a separate form, there are other differences from the proposal in the regulation. For purposes of convenience, the following discussion treats the amended sections in sequence.

In section 580.3, the proposed definition of transferor might in some jurisdictions include a person who creates a security interest in a vehicle. This type of transaction was not intended to be regulated, and the definitions have been amended accordingly.

In section 580.4, in addition to the changes discussed above, other modifications have been made. In response to a comment suggesting that the disclosure would be made after the purchaser had become committed to buying the vehicle, the order of § 580.4(a) has been rearranged to specify that the odometer disclosure is to be made before the other transfer documents are executed.

The items listed under § 580.4(a) have been increased to allow for additional identification of the vehicle and owner that would be necessary on a separate disclosure document. If the disclosure is a part of another document, however, § 580.4(a)(1) provides that items (2) through (4) need not be repeated if found elsewhere in the document. A number of comments noted that the items under (a) might often be redundant.

A new paragraph (b) has been inserted in § 580.4 to require a reference to the sanctions provided by the Act. No specific form is required, but the inclusion of such a statement is considered essential to notify the transferee of the reason why he is being given the odometer information.

The former paragraph (b) of § 580.4 has been renumbered as (c), and the alternative methods for odometer disclosure discussed above are found as paragraphs (d) and (e).

A new section, § 580.5, Exemptions, has been added in response to a number of comments that objected to the application of the requirements to categories of vehicles for which the odometer is not used as a guide to value. Buses and large trucks, for example, are routinely driven hundreds of thousands of miles, and their main-

tenance records have traditionally been relied on by buyers as the principal guide to their condition. The NHTSA is in agreement with the position taken by Freightliner, White, and the National Association of Motor Bus Operators, and has therefore created an exemption for larger vehicles. The exemption applies to vehicles having gross vehicle weight ratings of more than 16,000 pounds.

A second category of exempt vehicles has been created for antique vehicles, whose value is a function of their age, condition, and scarcity, and for which the odometer mileage is irrelevant. A third exempt category consists of vehicles that are not self-propelled, such as trailers, most of which are not equipped with odometers.

Several vehicle manufacturers stated that the proposal would require them to give disclosure statements to their distributors and dealers, and that such a requirement would be both burdensome and pointless. Upon consideration of the nature of manufacturer-dealer transactions, it has been decided to exempt transfers of new vehicles that occur prior to the first sale of the vehicle for purposes other than resale.

The odometer disclosure form set forth in § 580.6 has been reworded to make it clearer. Space for additional information about the vehicle and owner has been included so that the vehicle will be readily identifiable if the disclosure statement becomes separated from the other transfer documents. In accordance with the instructions of the Act, the transferor is directed to state that the mileage is unknown if he knows that the actual mileage differs from the mileage shown on the odometer. Although several comments suggested that the true mileage, if known, should be stated, such a statement is not provided for in the Act and would not afford the buyer with reliable information about the vehicle.

The effective date proposed in the notice was to have been six months after issuance. Two States, perhaps under the impression that they were required to change their forms, requested an additional six months. Other comments, notably that of the National Automobile Dealers Association, urged an immediate effective date in order to make the disclosure requirements coin-

cide with the effectiveness of the other parts of Title IV of the Act. Upon consideration of the important contribution the disclosure requirements make to the effectiveness of the Act's other provisions, it has been decided that an effective date earlier than six months after issuance is advisable.

Accordingly, the regulation is to become effective March 1, 1973. Although it is likely that most private persons will remain unaware of the disclosure requirements for some time after March 1, 1973, a person who does not know of the requirement will not have "intent to defraud" under section 409(a) of the Act and will therefore not be subject to liability solely because he has failed to make the required statement. The persons most immediately affected by the disclosure requirements are commercial enterprises such as dealers and wholesalers, and of these the

largest group, represented by NADA, has already indicated its desire for an early effective date. The earlier effective date is therefore considered appropriate.

In consideration of the foregoing, a new Part 580, Odometer Disclosure Requirements, is added to Title 49, Code of Federal Regulations, to read as set forth below.

Issued under the authority of section 408(a) of the Motor Vehicle Information and Cost Savings Act, P.L. 92-513, 86 Stat. 947, and the delegation of authority at 49 C.F.R. 1.51.

Issued on January 23, 1973.

Douglas W. Toms,  
Administrator.

**38 F.R. 2978**  
**January 31, 1973**



## PART 580—ODOMETER DISCLOSURE REQUIREMENTS

### § 580.1 Scope.

This part prescribes rules requiring the transferor of a motor vehicle to make written disclosure to the transferee concerning the odometer mileage and its accuracy, as directed by section 408(a) of the Motor Vehicle Information and Cost Savings Act, Public Law 92-513.

### § 580.2 Purpose.

The purpose of this part is to provide each purchaser of a motor vehicle with odometer information to assist him in determining the vehicle's condition and value.

### § 580.3 Definitions.

All terms defined in Sections 2 and 402 of the Act are used in their statutory meaning. Other terms used in this part are defined as follows:

"Transferor" means any person who transfers his ownership in a motor vehicle by sale, gift, or any means other than by creation of a security interest.

"Transferee" means any person to whom the ownership in a motor vehicle is transferred by purchase, gift, or any means other than by creation of a security interest.

### § 580.4 Disclosure of odometer information.

Except as provided in § 580.5—

(a) Before executing any transfer of ownership document, each transferor of a motor vehicle shall furnish to the transferee a written statement signed by the transferor, containing the following information:

(1) The odometer reading at the time of transfer; and, unless provided elsewhere on a transfer document integral with the odometer disclosure;

(2) The date of the transfer;

(3) The transferor's name and current address; and

(4) The identity of the vehicle, including its make, model, and body type, its vehicle identification number, and its last plate number.

(b) In addition to the information provided under (a), the statement shall refer to the Motor Vehicle Information and Cost Savings Act and shall state that incorrect information may result in civil liability under it.

(c) In addition to the information provided under (a), if the transferor knows that the odometer reading differs from the number of miles the vehicle has actually traveled, and that the difference is greater than that caused by odometer calibration error, he shall include a statement that the actual mileage is unknown.

(d) If a document provided under the laws or regulations of the State in which the transfer occurs contains the statements required by paragraphs (a), (b), and (c) of this section, the transferor may make the disclosure required by this section either by executing the State document or by executing the disclosure form specified in § 580.6.

(e) If there is no State document as described in paragraph (d) of this section, the transferor shall make the disclosure required by this section by executing the disclosure form specified in § 580.6.

### § 580.5 Exemptions.

Notwithstanding the requirements of § 580.4—

(a) A transferor of any of the following motor vehicles need not disclose the vehicle's odometer mileage:

(1) A vehicle having a Gross Vehicle Weight Rating, as defined in § 570.3 of this title, of more than 16,000 pounds;

(2) A vehicle that is not self-propelled; or

(3) A vehicle that is 25 years old or older.

(b) A transferor of a new vehicle prior to its first transfer for purposes other than resale need not disclose the vehicle's odometer mileage.

§ 580 Disclosure form.

ODOMETER MILEAGE STATEMENT

(Federal regulations require you to state the odometer mileage upon transfer of ownership. An inaccurate statement may make you liable for damages to your transferee, pursuant to § 409(a) of the Motor Vehicle Information and Cost Savings Act of 1972, Public Law 92-513.)

I, \_\_\_\_\_, state that the odometer mileage indicated on the vehicle described below is \_\_\_\_\_ miles.

(Check the following statement, if applicable:)

- I further state that the actual mileage differs from the odometer reading for reasons other than odometer calibration error and that the actual mileage is unknown.

Make	Body Type	Year	Model'
Vehicle Identification Number		Last Plate Number	

Transferor's address \_\_\_\_\_

Transferor's Signature \_\_\_\_\_

Date of this Statement \_\_\_\_\_

**38 F.R. 2978**  
**January 31, 1973**

## PREAMBLE TO PART 582—INSURANCE COST INFORMATION REGULATION

(Docket 74-40; Notice 2)

This notice establishes an insurance cost information regulation pursuant to the Motor Vehicle Information and Cost Savings Act (15 U.S.C. 1901 *et seq.*). The regulation is based upon a notice of proposed rulemaking published November 4, 1974 (39 F.R. 38912) and comments submitted in response to the notice.

The regulation will require automobile dealers to distribute to prospective purchasers information which compares differences in insurance costs for different makes and models of passenger motor vehicles based upon differences in their damage susceptibility and crashworthiness. In the absence of insurance cost information that reflects damageability and crashworthiness, this rule does not, at the present time, have an effect on automobile dealers. Damage susceptibility and crashworthiness studies currently being conducted by the NHTSA are expected to influence the insurance rate structure by providing data which will enable the insurance industry to take these factors into account. As this occurs, the NHTSA will prepare comparative indices for the dealers to distribute to prospective purchasers.

Several comments on the proposed rulemaking discussed the merits of the Motor Vehicle Information and Cost Savings Act and are therefore beyond the scope of this rulemaking. Other comments offered methods for performing the damage susceptibility and crashworthiness studies. These comments have been forwarded to the technical staff performing the studies. Two comments suggested minor changes in the text of the regulation for clarity and to make the proposed regulation more consistent with the purposes of the Act. These suggestions have been adopted

in the final regulation. Their effect is that the insurance cost information disseminated by the dealers would be in the form of comparative indices, based on differences in damage susceptibility and crashworthiness, rather than simply the insurance premium rate which is determined by many factors.

One comment expressed the view that providing this information to consumers within 30 days after its publication in the *Federal Register* was an excessive burden upon the dealers. The NHTSA does not believe that sufficient justification for this position has been made in light of the need to provide the information to the consumer in time for it to be of use to him in purchasing an automobile.

Therefore, a new Part 582, *Insurance Cost Information*, is added in Chapter V, Title 49, Code of Federal Regulations, to read as set forth below.

*Effective date:* Although the final rule is effective February 1, 1975, as specified in the Cost Savings Act, the dates when automobile dealers will be required to distribute insurance cost information are dependent upon NHTSA progress in developing such information and will be published at a later date in the *Federal Register*.

(Sec. 201(c), P. L. 92-513, 86 Stat. 947 (15 U.S.C. 1941(e)); delegation of authority at 49 CFR 1.51).

Issued on January 31, 1975.

James B. Gregory  
Administrator

40 F.R. 4918  
February 3, 1975



## PART 582—INSURANCE COST INFORMATION REGULATIONS

**§ 582.1 Scope.** This part requires automobile dealers to make available to prospective purchasers information reflecting differences in insurance costs for different makes and models of passenger motor vehicles based upon differences in damage susceptibility and crashworthiness, pursuant to section 201(e) of the Motor Vehicle Information and Cost Savings Act (15 U.S.C. 1941(e)), herein "the Cost Savings Act."

**§ 582.2 Purpose.** The purpose of this part is to enable prospective purchasers to compare differences in auto insurance costs for the various makes and models of passenger motor vehicles based upon differences in damage susceptibility and crashworthiness, and to realize any savings in collision insurance resulting from differences in damageability, and any savings in medical payment insurance resulting from differences in crashworthiness.

### § 582.3 Definitions.

(a) *Statutory definitions.* All terms used in this part which are defined in section 2 of the Cost Savings Act are used as so defined.

(b) *Definitions used in this part.*

(1) "Automobile dealer" means any person who engages in the retail sale of new or used automobiles as a trade or business.

(2) "Collision insurance" means insurance that reimburses the insured party for physical damage to his property resulting from automobile accidents.

(3) "Insurance cost" means the insurance premium rate, as expressed in appropriate indices, for collision and medical payment, including personal injury protection in no-fault states.

(4) "Medical payment insurance" means insurance that reimburses the insured party for medical expenses sustained by himself, his family, and his passengers in automobile accidents.

### § 582.4 Requirements.

(a) Each automobile dealer shall provide the insurance cost information specified in § 582.5 for examination by prospective purchasers at each location where he offers vehicles for sale.

(b) The information shall be provided without charge and in sufficient quantity to have it available for retention by prospective purchasers, within 30 days after its publication in the *Federal Register*.

(c) The information shall be in English and, if a significant portion of the prospective purchasers do not speak English, in the non-English language most widely spoken by prospective purchasers.

### § 582.5 Insurance cost information form.

The insurance cost information provided pursuant to section 582.4 shall be presented as follows: [Form to be specified].

40 F.R. 4918  
February 3, 1975



**PREAMBLE TO PART 590—MOTOR VEHICLE EMISSIONS INSPECTION CRITERIA**

(Docket No. 72-24; Notice 2)

This notice issues a regulation to establish emissions inspection criteria for a diagnostic inspection demonstration projects funded pursuant to the Motor Vehicle Information and Cost Savings Act (15 U.S.C. 1901, *et seq.*). The regulation is based upon a notice of proposed rulemaking published June 11, 1974 (39 F.R. 20501) and upon comments submitted in response to the notice, and is issued in consultation with the Administrator of the Environmental Protection Agency.

Under Title 15 U.S.C., Section 1962(a), a State may obtain a grant from the Federal government for the purpose of establishing and operating a diagnostic inspection demonstration project. The purpose of the grant program is to explore the feasibility of using diagnostic test devices to conduct diagnostic safety and emission inspection of motor vehicles. The demonstration projects are also designed to help the Federal and State governments determine the best means of structuring safety and emissions inspection programs. Pursuant to the requirements of section 1962(b), this rule establishes emissions inspection criteria to be met by projects funded under this program. The criteria established govern the manner of operation of five Federally-funded State diagnostic inspection demonstration projects to be conducted in Alabama, Arizona, the District of Columbia, Puerto Rico, and Tennessee, and do not, in themselves, impose requirements on any other State or upon any individual.

The subject most commonly discussed in the comments was whether a loaded test mode or a high speed no load test mode would be more effective than the basic idle-only mode inspection procedure in detecting vehicles with very high emission levels and in diagnosing problems. Because this program calls for demonstration projects and is in the nature of a feasibility

study, the NHTSA considers that the most appropriate course is to compare the alternative procedures and, in this way, generate data which may ultimately resolve the question. Accordingly, the States will be allowed to choose between loaded-mode and no-load inspection procedures. For similar reasons no-load inspection procedures will include both low and high speed measurements until such time as the data collected indicates that unloaded high-speed measurements are unwarranted.

Since one of the major purposes of the program is to determine whether this type of inspection is both feasible and cost beneficial, the criteria do not specify that the emission levels be the lowest attainable, but represent a fair balance between low rejection rates which would result in limited program effectiveness and high rejection rates which would result in adverse public reaction. In the event that the actual rejection rate varies significantly from our estimate of approximately 30 percent, the emissions criteria will be modified to bring the rate to the desired level. Because the emission criteria are less stringent than those permitted under the Federal Emission Certification Test criteria, it is not anticipated that conflicting requirements on engine design will result from their application in this program.

Two comments were addressed to the point that the mechanical dynamometer suggested for use in the loaded mode inspection may not simulate normal road loading as well as an electric dynamometer. The purpose of the dynamometer is to provide an adequate load to the engine to allow detection of carburetor main and power circuit malfunctions and ignition misfiring under load. Because this function does not require true road load duplication NHTSA does not consider that the more expensive electric dynamometer should be required.

General Motors Corporation suggested that oxides of nitrogen (NO<sub>x</sub>) measurement be included in the emission inspection criteria. The Environmental Protection Agency recommended waiting until such time as NO<sub>x</sub> controlled vehicles account for a more significant part of the vehicle population in order to make such a program meaningful. NO<sub>x</sub> measuring instruments suitable for this type of inspection have not been developed to a point where low cost, reliable instruments are readily available. Furthermore, tuning a car without NO<sub>x</sub> controls tends to increase the NO<sub>x</sub> emissions slightly while reducing the hydrocarbon and carbon monoxide emissions. Therefore, NHTSA agrees with the EPA that until newer vehicles with NO<sub>x</sub> control devices begin to account for a more substantial part of the overall vehicle population, the level of reduction of emissions of oxides of nitrogen that might be obtained is not large enough to warrant the inclusion of NO<sub>x</sub> inspection at this time.

While the criteria developed in this rulemaking would be appropriate for emissions inspection of light duty trucks and other light duty vehicles, NHTSA has decided not to include these vehicles in the data pool for the demonstration projects. The rule requires that the idle speed of the vehicle at the time of inspection must not be more than 100 rpm greater than that recommended by the manufacturer. The purpose of this requirement is to ensure that

high idle speeds are not masking excessive idle carbon monoxide levels. At the suggestion of the American Motors Corporation the units of measure for proposed emission levels are more specifically identified than in the notice of proposed rulemaking. The unit of measurement of carbon monoxide concentration is Mole percent, while that for hydrocarbon concentration is ppm as hexane.

Therefore, a new Part 590, Motor Vehicle Emission Inspections, is added in Chapter V, Title 49, Code of Federal Regulations. . . .

*Effective date:* This part becomes effective July 5, 1975. The notice of proposed rulemaking had proposed an effective date 30 days after issuance of the final rule. Because the five States that have received grants have all developed their emission inspection in accordance with the proposed criteria, they will not be adversely affected by an immediate effective date. Good cause is accordingly found for an immediate effective date.

(Section 302(b)(1), Pub. L. 92-513, 86 Stat 947, 15 U.S.C. 1901; delegation of authority at 49 CFR 1.51.)

Issued on June 5, 1975.

James B. Gregory  
Administrator

40 F.R. 24904

June 11, 1975

## PART 590—EMISSION INSPECTIONS

*Sec.***590.1 Scope.****590.2 Purpose.****590.3 Applicability.****590.4 Definitions.****590.5 Requirements.****590.6 No-load inspection.****590.7 Loaded-mode inspection.****590.8 Inspection conditions.****§ 590.1 Scope.**

This part specifies standards and procedures for motor vehicle emission inspections by State or State-supervised diagnostic inspection demonstration projects funded under Title III of the Motor Vehicle Information and Cost Savings Act (15 U.S.C. 1901, *et seq.*).

**§ 590. Purpose.**

The purpose of this part is to support the development of effective regulation of automobile exhaust emissions and thereby improve air quality, by establishing appropriate uniform procedures for diagnostic emission inspection demonstration projects.

**§ 590.3 Applicability.**

This part does not impose requirements on any person. It is intended to be utilized by State diagnostic inspection demonstration projects operating under Title III of the Cost Savings Act for diagnostic emission inspections of passenger cars powered by spark-ignition engines.

**§ 590.4 Definitions.**

All terms used in this part that are defined in 49 CFR Part 571, Motor Vehicle Safety Standards, are used as defined in that Part.

**§ 590.5 Requirements.**

A diagnostic inspection demonstration project shall test vehicles in accordance with either the no-load inspection criteria specified in section 590.6, or the loaded-mode inspection criteria specified in section 590.7.

**§ 590.6 No-load inspection.**

(a) *Criteria.* The vehicle must meet the following criteria when tested by the no-load inspection method.

(1) The vehicle's idle speed, measured with the transmission in the position recommended by the manufacturer for adjusting the idle speed, shall not be more than 100 rpm higher than the idle speed recommended by the manufacturer.

(2) Concentrations of emission samples taken from each exhaust outlet shall not exceed the following levels:

(i) For model years 1967 and earlier: hydrocarbons (HC) 1200 ppm as hexane, and carbon monoxide (CO) 9.0 mole percent.

(ii) For model years 1968 through 1973: HC 600 ppm as hexane, and CO 7.0 mole percent.

(b) *Method.* No-load inspection is conducted by measuring two emission samples from each exhaust outlet. The first emission sample is collected with the vehicle's transmission in neutral and the engine operating at 2250 rpm. The second sample is collected with the vehicle's transmission in the position recommended by the manufacturer for adjusting the idle speed, and the engine idling.

**§ 590.7 Loaded-mode inspection.**

(a) *Criteria.* When the loaded-mode inspection is conducted, concentrations of the emission

samples taken from each exhaust outlet for each of the three phases of the driving cycle in Table I, conducted in the sequence indicated, shall not exceed the levels given in Table II. For the

purpose of determining the weight classification of a motor vehicle for the loaded-mode inspection, 300 pounds are added to the vehicle's unladen curb weight.

TABLE I

Curb weight plus 300 lbs	Driving cycle (speed-load combination)		
	1st phase high cruise	2d phase low cruiser	3d phase idle
3,801 lbs and up	48 to 50 mi/h at 27 to 30 hp	32 to 35 mi/h at 10 to 12 hp	At idle.
2,801 to 3,800 lbs	44 to 46 mi/h at 21 to 24 hp	29 to 32 mi/h at 8 to 10 hp	Do.
2,000 to 2,800 lbs	36 to 38 mi/h at 13 to 15 hp	22 to 25 mi/h at 4 to 6 hp	Do.

TABLE II

High cruise	Low cruise	Idle
1967 and earlier model years		
HC 900 ppm as hexane	HC 900 ppm as hexane	HC 1,200 ppm as hexane
CO 4.5 mole percent	CO 5.5 mole percent	CO 9.0 mole percent
1968 through 1973		
HC 450 ppm as hexane	HC 450 ppm as hexane	HC 600 ppm as hexane
CO 3.75 mole percent	CO 4.25 mole percent	CO 7.0 mole percent

(b) *Method.* Loaded-mode inspection for the first two phases of the driving cycle described in Table I is conducted by measuring the levels of emission concentrations from each exhaust outlet of a motor vehicle operated on a chassis dynamometer, with the vehicle's transmission in the setting recommended by the vehicle manufacturer for the speed-load combination being tested. For the idle phase, vehicles with automatic transmissions are tested in drive, and vehicles with standard transmissions are tested in neutral.

#### § 590.8 Inspection conditions.

(a) The vehicle engine is at its normal operating temperature, as specified by the vehicle manufacturer.

(b) An engine speed indicator with a graduated scale from zero to at least 2500 rpm is used for the unloaded inspection procedure.

(c) The equipment used for analyzing the emission concentration levels—

(1) Has a warm-up period not to exceed 30 minutes;

(2) Is able to withstand sustained periods of continuous use;

(3) Has a direct and continuous meter readout that allows readings for concentration levels of carbon monoxide (CO) from 0-10 mole percent, and of hydrocarbon (HC) from 0-2000 ppm as hexane; and if used for the loaded-mode inspection, has at least one additional expanded direct and continuous readout for concentration levels of carbon monoxide and of hydrocarbon, such as from 0-5 mole percent and from 0-1000 ppm as hexane respectively;

(4) Has an accuracy of better than  $\pm 5\%$  of the full scale reading for each concentration range;

(5) Permits a reading for each emission concentration level, within 10 seconds after

the emission sample has been taken, that is not less than 90% of the final reading; and

(6) Has a calibration system using a standard gas, or an equivalent mechanical or elec-

trical calibration system which itself is based on a standard gas.

**40 F.R. 24904**

**June 11, 1975**

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## PREAMBLE TO DEPARTMENT OF THE TREASURY REGULATION RELATING TO IMPORTATION OF MOTOR VEHICLES AND ITEMS OF MOTOR VEHICLE EQUIPMENT

On April 10, 1968, Public Law 90-283 was enacted to amend the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1391-1409) by adding a new section 123. This section provides a procedure whereby the Secretary of Transportation is authorized, upon petition by a manufacturer of 500 or less vehicles annually, to temporarily exempt such vehicles from certain Federal motor vehicle safety standards. The procedures for temporary exemption of such vehicles adopted by the Department, as published in the *Federal Register* on September 26, 1968 (33 F.R. 14457), require each exempted vehicle to bear a label or tag permanently affixed containing certain information including a statement listing the safety standards for which an exemption has been obtained. Since vehicles so exempted will no longer bear the "valid certification as required by section 114 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1403)" which is required by 19 CFR 12.80(b)(1) if a motor vehicle offered for importation is not to be refused entry, it is deemed desirable to amend 19 CFR 12.80(b) to allow entry of exempted vehicles bearing the exemption labels or tags required under the regulations of the Department of Transportation (23 CFR 217.13).

In addition, the Automobile Manufacturer's Association, Inc., on behalf of itself and its member companies, has made a showing of the necessity of importing and using for purposes of test or experiment for a limited time on the public roads, of a limited number of nonconforming motor vehicles manufactured outside the United States. The Association has requested an amendment of 19 CFR 12.80(b)(2)(vii) which currently, among other things, allows the importation of such vehicles for such purposes only upon a declaration by the importer that these vehicles will not be licensed for use on the public roads.

In consideration of the foregoing, § 12.80(b) is amended as follows:

Subparagraph (b)(1) is amended by changing the period following the words "so labelled or tagged", to a comma and (b)(2)(vii) is amended to read as follows:

§ 12.80 Federal Motor vehicle safety standards.

\* \* \* \* \*

(b) \* \* \*

(1) \* \* \* or (iii) (for vehicles only which have been exempted by the Secretary of Transportation from meeting certain safety standards) it bears a label or tag permanently affixed to such vehicle which meets the requirements set forth in the regulations of the Department of Transportation, 23 CFR 217.13.

(2) \* \* \*

(vii) The importer or consignee is importing such vehicle or equipment item solely for the purposes of show, test, experiment, competition, repairs or alterations and that such vehicle or equipment item will not be sold or licensed for use on the public roads: Provided, That vehicles imported solely for purposes of test or experiment may be licensed for use on the public roads for a period not to exceed one year, where such use is an integral part of tests or experiments for which such vehicle is being imported, upon condition that the importer attach to the declaration description of the tests or experiments for which the vehicle is being imported, the period of time during which it is estimated that it will be necessary to test the vehicle on the public roads, and the disposition to be made of the vehicle after completion of the tests or experiments.

\* \* \* \* \*

(Sec. 108, 80 Stat. 722, 15 U.S.C. 1397)

Since the first amendment is necessitated to conform to regulations of the Department of

Transportation presently in effect and the second will affect a very limited number of persons with a legitimate interest in road testing non-conforming vehicles, notice and public procedure thereon is not considered necessary and good cause is found for dispensing with the delayed effective date provision of 5 U.S.C. 553(d). Therefore, the amendments shall be effective upon publication in the *Federal Register*.

[SEAL]

Lester D. Johnson  
Commissioner of Customs

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Approved: November 29, 1968.

Joseph M. Bowman,  
Assistant Secretary  
of the Treasury.

Approved: December 9, 1968.

Lowell K. Bridwell,  
Federal Highway Administrator.

33 F.R. 18577  
December 14, 1968

**PREAMBLE TO AMENDMENT TO DEPARTMENT OF THE TREASURY REGULATION RELATING  
TO IMPORTATION OF MOTOR VEHICLES AND ITEMS OF MOTOR VEHICLE EQUIPMENT**

**(T.D. 71-122)**

A notice was published in the *Federal Register* on February 18, 1971 (36 F.R. 3121), that it was proposed to amend § 12.80 of the Customs Regulations (19 CFR 12.80) to make the following substantive changes:

1. To provide that motor vehicles and motor vehicle equipment brought into conformity under bond, shall not be sold or offered for sale until the bond is released;

2. To make clear that the term motor vehicle as used in § 12.80 refers to a motor vehicle as defined in the National Traffic and Motor Vehicle Safety Act of 1966;

3. To require a declaration of conformance accompanied by a statement of the vehicle's original manufacturer as evidence of original compliance;

4. To require that declarations filed under paragraph (c) of § 12.80 be signed by the importer or consignee; and

5. To add a bond requirement for the production of a declaration of original compliance and a declaration of conformity after manufacture.

Interested persons were given an opportunity to submit relevant data, views, or arguments. No comments were received. The amendments as proposed, with minor editorial changes, are hereby adopted as set forth below to become effective 30 days after the date of publication in the *Federal Register*.

Robert V. McIntyre,  
Acting Commissioner of Customs.

APPROVED: April 22, 1971.

Eugene T. Rossides,  
Assistant Secretary of the Treasury.

APPROVED: May 3, 1971.

Douglas W. Toms,  
Acting Administrator, National  
Highway Traffic Safety Administration.

**36 F.R. 8667  
May 11, 1971**



## DEPARTMENT OF THE TREASURY REGULATION RELATING TO IMPORTATION OF MOTOR VEHICLES AND ITEMS OF MOTOR VEHICLE EQUIPMENT

Notice of a proposal to add § 12.80 to Part 12 of the Customs Regulations to prescribe regulations providing for the admission or refusal of motor vehicles or items of motor vehicle equipment which are offered for importation into the United States and which are subject to Federal motor vehicle safety standards promulgated by the Department of Transportation in 49 CFR Part 571, pursuant to the provisions of the National Traffic and Motor Vehicle Safety Act of 1966, was published in the *Federal Register* for November 30, 1967 (32 F.R. 16432). Interested persons were given an opportunity to submit relevant data, views, or arguments in writing regarding the proposed regulations. All comments received have been carefully considered.

In response to those comments, in addition to several minor changes, the first paragraph of § 12.80(b) has been amended to provide for the entry, without written declaration, of motor vehicles and items of motor vehicle equipment intended for export and so labeled. A new provision is also added (§ 12.80(b)(2)(iv)) to provide for the entry, upon written declaration, of new vehicles intended for resale which do not fully conform to the safety standards because of the absence of readily attachable equipment items: *Provided*, That the importer or consignee undertakes to attach the missing items before such vehicles are offered to the general public for sale. Finally, the importation of nonconforming vehicles for competition purposes will be permitted under § 12.80(b)(2)(vii) if the vehicle will not be licensed for use on the public roads.

Part 12 is accordingly amended to add a new centerhead and section as follows:

Motor Vehicles and Motor Vehicle Equipment  
Manufactured on or after January 1, 1968

### § 12.80 Federal motor vehicle safety standards.

[(a) *Standards prescribed by the Department of Transportation.* Motor vehicles and motor vehicle equipment manufactured on or after January 1, 1968, offered for sale, or introduction or delivery for introduction in interstate commerce, or importation into the United States are subject to Federal Motor Vehicle Safety Standards (hereafter referred to in this section as "safety standards") prescribed by the Secretary of Transportation under sections 103 and 119 of the National Traffic and Motor Vehicle Safety Act of 1966. (15 U.S.C. 1392, 1407) as set forth in regulations in 49 CFR Part 571. A motor vehicle hereafter referred to in this section as "vehicle" or item of motor vehicle equipment (hereafter referred to in this section as "equipment item"), manufactured on or after January 1, 1968, is not permitted entry into the United States unless (with certain exceptions set forth in paragraph (b) of this section) it is in conformity with applicable safety standards in effect at the time the vehicle or equipment item was manufactured.

#### (b) *Requirements for entry and release.*

(1) Any vehicle or equipment item offered for importation into the customs territory of the United States shall not be refused entry under this section if (i) it bears a certification label affixed by its original manufacturer in accordance with section 114 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1403) and regulations issued thereunder by the Secretary of Transportation (49 CFR Part 567) (in the case of a vehicle, in the form of a label or tag permanently affixed to such vehicle or in the case of an equipment item, in the form of a label or tag on such item or on the outside of a container in which such item is delivered), or (ii) it is intended solely for export, such vehicle or equipment

item and the outside of its container, if any, to be so labeled and tagged, or (iii) (for vehicles only which have been exempted by the Secretary of Transportation from meeting certain safety standards) it bears a label or tag permanently affixed to such vehicle which meets the requirements set forth in the regulations of the Department of Transportation, 49 CFR 555.13.

(2) Any such vehicle or equipment item not bearing such certification or export label shall be refused entry unless there is filed with the entry, in duplicate, a declaration signed by the importer or consignee which states that: (36 F.R. 8667—May 11, 1971. Effective: 6/10/71)】

(i) Such vehicle or equipment item was manufactured on a date when there were no applicable safety standards in force, a verbal declaration being acceptable at the option of the district director of customs for vehicles entering at the Canadian and Mexican borders; or

【(ii) Such vehicle or equipment item was not manufactured in conformity with applicable safety standards but has since been brought into conformity, such declaration to be accompanied by the statement of the manufacturer, contractor, or other person who has brought such vehicle or equipment item into conformity which describes the nature and extent of the work performed; or

(iii) Such vehicle or equipment item does not conform with applicable safety standards, but that the importer or consignee will bring such vehicle or equipment item into conformity with such safety standards, and that such vehicle or equipment item will not be sold or offered for sale until the bond (required by paragraph (c) of this section) shall have been released; or (36 F.R. 8667—May 11, 1971. Effective: 6/10/71)】

(iv) Such vehicle is a new vehicle being imported for purposes of resale which does not presently conform to all applicable safety standards because readily attachable equipment items are not attached, but that there is affixed to its windshield a label stating the safety standard with which and the manner in which such vehicle does not conform and

that the vehicle will be brought into conformity by attachment of such equipment items before it will be offered for sale to the first purchaser for purposes other than resale; or

(v) The importer or consignee is a non-resident of the United States, importing such vehicle or equipment item primarily for personal use or for the purpose of making repairs or alterations to the vehicle or equipment item, for a period not exceeding 1 year from the date of entry, and that he will not resell it in the United States during that time: PROVIDED, That persons regularly entering the United States by a motor vehicle at the Canadian and Mexican borders may apply to the district director of customs for an appropriate means of identification to be affixed to such vehicle which will serve in place of the declaration required by this paragraph; or

(vi) The importer or consignee is a member of the armed forces of a foreign country on assignment in the United States, or is a member of the Secretariat of a public international organization so designated pursuant to 59 Stat. 669 on assignment in the United States, or is a member of the personnel of a foreign government on assignment in the United States who comes within the class of persons for whom free entry of motor vehicles has been authorized by the Department of State and that he is importing such vehicle or equipment item for purposes other than resale; or

【(vii) The importer or consignee is importing such vehicle or equipment item solely for the purpose of show, test, experiment, competition, repairs or alterations and that such vehicle or equipment item will not be sold or licensed for use on the public roads: PROVIDED: That vehicles imported solely for purposes of test or experiment may be licensed for use on the public roads for a period not to exceed one year, where such use is an integral part of tests or experiments for which such vehicle is being imported, upon condition that the importer attach to the declaration a description of the tests or experiments for which the ve-

hicle is being imported, the period of time during which it is estimated that it will be necessary to test the vehicle on the public roads, and the disposition to be made of the vehicle after completion of the tests or experiments. (33 F.R. 18577—Dec. 14, 1968)】

【(viii) Such vehicle which is not manufactured primarily for use on the public roads is not a "motor vehicle" as defined in section 102 of the National Traffic and Motor Vehicle Safety Act of 1966 (15 U.S.C. 1391); or

(ix) Such vehicle was manufactured in conformity with applicable safety standards, such declaration to be accompanied by a statement of the vehicle's original manufacturer as evidence of original compliance.

(3) Any declaration given under this section (except an oral declaration accepted at the option of the district director of customs under subparagraph (2)(i) of this paragraph) shall state the name and United States address of the importer or consignee, the date and the entry number, a description of any equipment item, the make and model, engine serial, and body serial numbers of any vehicle or other identification numbers, and the city and State in which it is to be registered and principally located if known, and shall be signed by the importer or consignee. The district director of customs shall immediately forward the original of such declaration to the National Highway Traffic Safety Administration of the Department of Transportation.

(c) *Release under bond.* If a declaration filed in accordance with paragraph (b) of this section states that the entry is being made under circumstances described in paragraph (b)(2)(iii), or under circumstances described in paragraph (b)(2)(ii) or (ix) of this section where the importer at time of entry does not submit a statement in support of his declaration of conformity the entry shall be accepted only if the importer gives a bond on Customs Forms 7551, 7553, or 7595 for the production of either a statement by the importer or consignee that the vehicle or equipment item described in the declaration filed by the importer has been brought into conformity with applicable safety stand-

ards and identifying the manufacturer, contractor, or other person who has brought such vehicle or equipment item into conformity with such standards and describing the nature and extent of the work performed or a statement of the vehicle manufacturer certifying original conformity. The bond shall be in the amount required under § 25.4(a) of this chapter. Within 90 days after such entry, or such additional period as the district director of customs may allow for good cause shown, the importer or consignee shall deliver to both the district director of customs, and the National Highway Traffic Safety Administration a copy of the statement described in this paragraph. If such statement is not delivered to the district director of customs for the port of entry of such vehicle or equipment item within 90 days of the date of entry or such additional period as may have been allowed by the district director of customs for good cause shown, the importer or consignee shall deliver or cause to be delivered to the district director of customs those vehicles or equipment items, which were released in accordance with this paragraph. In the event that any such vehicle or equipment item is not redelivered within 5 days following the date specified in the preceding sentence, liquidated damages shall be assessed in the full amount of a bond given on Form 7551. When the transaction has been charged against a bond given on Form 7553, or 7595, liquidated damages shall be assessed in the amount that would have been demanded under the preceding sentence if the merchandise had been released under a bond given on Form 7551. (36 F.R. 8667—May 11, 1971. Effective: 6/10/71)】

(d) *Merchandise refused entry.* If a vehicle or equipment item is denied entry under the provisions of paragraph (b) of this section, the district director of customs shall refuse to release the merchandise for entry into the United States and shall issue a notice of such refusal to the importer or consignee.

(e) *Disposition of merchandise refused entry into the United States; redelivered merchandise.* Vehicles or equipment items which are denied entry under paragraph (b) of this section or which are redelivered in accordance with paragraph (c) of this section and which are not ex-

ported under customs supervision within 90 days from the date of notice of refusal of admission or date of redelivery shall be disposed of under customs laws and regulations; *Provided, however*, That any such disposition shall not result in an introduction into the United States of a vehicle or equipment item in violation of the National Traffic and Motor Vehicle Safety Act of 1966.

(Sec. 623, 46 Stat. 759, as amended, sec. 108, 80 Stat. 722; 19 U.S.C. 1623; 15 U.S.C. 1397)

Since motor vehicles and items of motor vehicle equipment subject to the standards prescribed in 49 CFR Part 571, may shortly be in transit to United States ports of entry, it is important that these regulations be put into effect at the earliest possible date. It is therefore found that the ad-

vance publication requirement under 5 U.S.C. 553 is impracticable and good cause is found for adopting these regulations effective upon publication in the *Federal Register*.

(SEAL)

Lester D. Johnson  
Commissioner of Customs

APPROVED: January 2, 1968.

Matthew J. Marks,  
Acting Assistant Secretary  
of the Treasury

APPROVED: January 5, 1968.

Alan S. Boyd  
Secretary of Transportation

**33 F.R. 360**

**January 10, 1968**

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